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The Representation of Architecture at the Royal Academy.

WE have often expressed dissatisfaction with the manner in which architecture is represented at the Royal Academy annual exhibitions, mainly on three grounds: the insufficiency of space, the prevalence of mere pictures of buildings in place of drawings from which the construction of the design could be studied, and the preference obviously given to showiness of drawing, especially to drawings which are the work of those who may be called "professional draughtsmen," and which are not the work of the architect whose name they bear in the catalogue. As we have frequently heard similar dissatisfaction expressed by various members of the architectural profession, on these and other grounds, we have made an attempt to elicit the views of architects on this subject in a more general manner by sending to a good many architects a circular letter inquiring whether they were satisfied with the manner in which architecture was at present represented at the Academy exhibitions; if not, in what direction they would suggest that improvements might be made, and more especially if they were in favour of greater prominence being given to geometrical drawings in preference to mere pictures of buildings. We also requested each of our correspondents to state whether we were at liberty to quote his opinion by name.

We have received, up to the time of writing this, about fifty replies, some of them of considerable interest, and in all but one or two cases with full permission to cite them. Summarising their contents generally, we may say that the writers are almost unanimous in being dissatisfied with the architectural exhibition at the Academy as it at present exists. Among these, however, eight may be scheduled as "pessimistic," having no belief in the use of an exhibition of architectural drawings at all, and three others are pessimistic as regards the public who visit the Academy, considering that no kind of exhibition of architectural drawings will ever be intelligible or interesting to the public.

The other points touched upon in the various letters may be broadly classified under the following heads: the object of an architectural exhibition; the kind of drawings to be exhibited; the space required, or the manner of distribution of the drawings; the employment of draughtsmen other than the author of the design; and what in France would be called the question of "the jury," of the persons by whom the selection of drawings is made. In this classification, by far the greater unanimity is found in regard to the preference of geometrical drawings over perspectives, twenty-nine correspondents decidedly advocating more prominent consideration being given to geometrical drawings, though we cannot help observing that several out of these habitually exhibit perspective drawings of their buildings executed by another hand than their own. This may no doubt be partly owing to an idea that effective perspective drawings are, under the present regîme, more likely to be hung than geometrical drawings. Three correspondents only regard the space now given as sufficient (for reasons to be noted hereafter); six object to geometrical drawings, for various reasons; four think they should always be accompanied by perspectives, and twelve think that photographs of buildings are a useful addition and in some cases better than perspectives. Twelve correspondents object more or less strongly to the admission of perspective drawings made by a hired draughtsman who is not the designer. Seventeen consider that with the present space available no adequate representation of architecture is possible; and five consider that the selection of what shall be hung in the Architectural Room is often not in the right hands, and is made without sufficient knowledge of the points which give value to an architectural drawing.

We will proceed to quote the opinions of some of our correspondents on the various points classified above; it is impossible to quote them all, especially as some are expressions of nearly the same opinion in varying language.

The question, what is the real object of the exhibition of architectural drawings at the Royal Academy is of course, in a sense, at the bottom of the whole subject. The majority of our correspondents adopt, either tacitly or in so many words, the view that the exhibition is primarily for the benefit of those who wish to study architectural designs seriously, in their development in accordance with plan and construction; in other words, that the exhibition should be primarily such as would interest architects, and that the public, if they are to pay attention to the exhibition, must learn to understand and study the drawings from the same point of view. Two or three of them, however, take very strongly the opposite view—that the exhibition is of no value unless it interests the public, and that the public will not find any interest except in drawings of a pictorial class. It is upon this consideration that the question of whether geometrical drawings or pictorial drawings are to be preferred to a great extent turns.

Two architect members of the Royal Academy itself have kindly given us their opinion on the subject. Mr. T. G. Jackson considers that there is little educational good to be got out of any exhibition of architectural drawings, but at the same time thinks that it is necessary that both architects and their employers should be able to see from year to year, in a collected form, what work is being done, and that "the exhibitions should illustrate the year's work correctly." This latter remark opens up an important consideration, on which other correspondents also touch, as to not merely the kind of drawings, but the class of work, which the contents of the Architectural Room should display. Mr. Jackson continues:—

> "It would be very useful, and also very instructive, if photographs of buildings, or details of buildings actually carried out, were allowed to be shown, and models of an inexpensive kind, like Mr. Prior's this year, might be exhibited with advantage.
>
> To encourage the exhibition of elevations would, I think, be mischievous. It should be the object of an architect to have as little to do with elevations himself as possible, and they ought never to be seen at all by anyone who is not an architect, because they are sure to mislead if presented as designs.
>
> An elevation, so far as it is practically useful, need seldom be anything but a simple diagram finished in the roughest way, or, better still, never finished at all. To cook it up into a picture only misleads the designer to think in elevation instead of in perspective, and misleads the outside public to imagine that an elevation conveys a correct idea of how the building will appear when executed. The best way of illustrating buildings, in my opinion, is by perspective sketches, accompanied by plans and sketches of detail, and, as I have said above, by photographs."

Mr. Jackson's opinions as to the futility of elaborate elevation-drawing in preparing the drawings for a building are well known, and perhaps we may take it that his condemnation of geometrical drawings for an architectural exhibition is to some extent coloured by this general opinion. Mr. Waterhouse,

our other R.A. correspondent,* suggests, in accordance with Mr. Jackson's remark, that as this is now the only annual exhibition which has a room devoted to architecture,† he does not think that any of the space on the walls should be devoted to sketches of ancient work (however meritorious either the work or its delineation may be), but should be reserved for illustrations of the architecture of the current year, or of the immediate past. He adds:—

"Part of the space might possibly be devoted, with advantage, to the exhibition of geometrical drawings, as, indeed, is the case at present with drawings showing the decoration of rooms; but such drawings hardly give the public so true a representation of buildings as perspective views do when faithfully prepared. Such perspective views might, however, be more frequently accompanied by floor plans than is now the case."

Thus it will be seen that in regard to the geometrical drawing question our two Academical correspondents differ considerably.

Having naturally given those within the Academy the first place, we will now proceed to notice the opinions of some of our other correspondents. Mr. Belcher considers that the problem of selecting exhibits for the Architectural Room must be a difficult one for the Academy, partly because architectural draughtsmanship has so much advanced of late years that it is not surprising if it often glorifies that which is unworthy. He continues—

"Bearing in mind that the exhibition is for the public the work should not of necessity be technical or educational. I certainly think that geometrical elevations should have their place, and are in many cases more effective than so-called pictorial representations. When plans and sections are attached they should be subordinate. I am, of course, aware that the plans and sections are of equal importance with the elevation to the architect and student, but a public exhibition of them at Academy exhibitions appears inappropriate; I prefer to see them in the *Builder*."

Another opinion of very opposite tendency comes to us from the same address, in a letter from Mr. A. B. Pite, which is one of the ablest communications on the subject that we have received, and we may quote the greater part of it. Mr. Pite says:—

"In reply to your letter as to the Royal Academy Exhibition of Architectural Works, I feel that the present exhibition arrangements are very unsatisfactory, and may be regarded as having exercised a limiting and prejudicial effect upon architectural drawing as an art, and upon public taste in such matters.

It may be said that the executed building is the true exhibition of the architect's art, but this is not the case, as it exhibits a great deal more in most cases—*e.g.*, builders' workmanship, false effects, owing to newness of materials, &c,, &c. The means by which the architect expresses his design and by which it is executed are the true test of his skill and usefulness in his art and generation.

Architectural art demands a thoroughness of detailed treatment and a consistent harmony of design in every phase of the building, and these qualities are brought to the test and exhibited only in the complete 'set' of drawings, and these are consequently essential to the proper illustration, as well as execution, of a work of architecture nowadays. Artistic harmony and constructional thoroughness can, in such circumstances, be duly weighed with each other, and all the factors of plan, section, elevation, detail, and perspective be considered in proper relation. I feel very strongly that no architectural exhibition is worthy of the name without architectural drawings as such forming the bulk of the exhibits; the sketches, perspectives, and isolated geometrical drawings of the current exhibitions being wretchedly unsatisfying.

A large increase of space for exhibition is required at the Royal Academy in order that such a reform may be effected. . . . The illustration of complete sets of drawings will not, I believe, prove to be uninteresting to the art or picture-loving public, or generally unpopular, as there is a typical regard for workmanlike quality and thoroughness in every art or science, and industrial exhibitions may be cited in illustration of this. A great stimulus will be thus given to sound architectural drawing and workmanship, and to fair and square draughtsmanship, that will exercise a beneficial effect upon the daily work of architects and a reflex influence on public opinion."

Mr. R. T. Blomfield considers the present exhibition unsatisfactory inasmuch as it "induces architects to devote themselves to the manufacture of picturesque drawings." (This is perhaps hardly correct, since it is part of our complaint, and that of many of our correspondents, that these "picturesque" drawings are made by proxy). Mr. Blomfield thinks any change would be welcome which would recall attention to the fact that architecture deals with design and has exceedingly little relation to mere draughtsmanship. He thinks the architectural exhibits should be limited to photographs of executed buildings and to geometrical drawings, and if there are perspectives they should at least be autographs of the architect who is responsible for the design. He adds, however, that it is probable that architecture would gain as a fine art if architects trusted to their buildings alone and did not trouble their heads about exhibitions, and that draughtsmanship is responsible for some of the exuberance of modern architectural detail. But then, if we are not mistaken, Mr. Blomfield considers all ornament on a building as an "exuberance."

Mr. J. M. Brydon writes:—

"In the first place, the room is too small for its many requirements, for not only is architecture proper shown there, but much of the space is given up to sketches of old work, designs for stained glass, and other decorative subjects. I am far from saying that decorative art should not be well represented at the Academy—quite the contrary—but if the architectural work of the year, or the time, is to be adequately displayed, then the whole of the present gallery should be given up to it.

Drawings of old work, and of the arts related to architecture, which are most interesting, might be relegated to another gallery—say, No. 9 on the plan in the Catalogue—a gain, I should think, to the exhibition as a whole. For an 'Academy of Arts,' there are far too many galleries given up to purely easel pictures.

Secondly, while I think that pictorial representations of buildings, as at present, should be retained, they should certainly be supplemented by plans, elevations, and sections on such a scale as to be easily read, and which need not necessarily be glazed; and also by photographs of executed work. If models are to be introduced, as this year, then the present gallery, even for purely architectural work, will soon become far too small."

Another correspondent, Mr. Prothero, expresses the opinion on the contrary that the present Architectural Room fails "because it lacks variety," the room allotted to it being also too small and out of the way. He says—

"What one would like to see would be a bigger and more central room, a larger proportion of working drawings, more sketches by the designers themselves, more models; and in the case of small objects, *e.g.*, of metal or woodwork, the thing itself would be of more interest than the drawing. In the same room needle-work, tapestry, and stained-glass might very well be shown."

Mr. Caröe considers that we owe the Academy a debt of gratitude as being the only body which has attempted to bring architecture before the public, while admitting that the result is unsatisfactory, mere draughtsmanship often bearing away the palm from the less attractive portrayal of even brilliant design. At the same time, a knowledge of the public taste does not warrant a belief that an exhibition formed entirely of working drawings would receive a larger share of the public support "to which the Academy naturally looks for subsistence":—

"Yet I hold that working drawings (of which a plan must be an essential part) form the *only* proper means of exhibiting architectural design. But if these alone are not sufficiently explanatory or attractive to the public, they may well be amplified by photographs from the building itself (and the brightest sun does not 'cook' our proportions or grouping), or by slight perspective drawings, rather illustrative than elaborately pictorial, if the building does not yet exist in fact.

At the same time I should be the last to desire the abolition of brilliant architectural draughtsmanship from the walls of the Academy. Might not this be secured by reserving a separate room for the draughtsman's works, where also drawings of ancient examples might be hung?"

Mr. Caröe's rather ominous suggestion that the Academy "depends for its subsistence on the favour of the public opens a pretty large question. We had been under the impression that the supposed object of the existence of an Academy of Arts was to promote the advancement of art—in other words, to teach the public something and to lead their taste. Mr. Caröe appears to assume as a matter of course that its object is merely to cater for the public taste. In that case we should like to know on what grounds it receives State support. The fact seems to be that the Academy insist on a small representation of architecture, sculpture, water-colour, and black-and-white, in order to give them their title of "Academy of Arts," but they refuse to represent them properly. A curious light is thrown on this point by a rough calculation of the perimeter of the space allotted to the various branches of art represented, which gives the following result:—

	feet.
Oil-paintings	1,421
Sculpture	206
Architecture, stained glass, &c.	116
Water-colour, pastel, and miniature	136
Black and white	80

Need more be said? The oil-painters are the majority in the Academy, and practically they make all the laws.

Mr. A. T. Bolton observes—

"No one who has seen the Salon can consider our Architectural Room satisfactory. We want space without limit, so that whole sets of strainers of competitions and actual work can be displayed, and no frames and glazing are necessary, and very little get-up. Large detail drawings sufficiently coloured in a good, if rough, style would have ten times the educational value of the views, which every year get smaller, as smallness is now considered to be a tip for a place. To my mind it is idle to consider the public, as is now attempted, seeing that few or none ever enter the room. No other plea could justify the present show. What is really interesting and instructive is the R.I.B.A. January exhibition, but that has the defect of not including the work that is actually being built."

Mr. Ricardo does not consider the present representation of architecture at the Royal Academy satisfactory. He says:—

"The examples are chosen with a view to interesting the amateur—not the student—and, consequently for the most part, for qualities of representation and draughtsmanship that are not necessarily present in the executed work. I think it is the function of the Royal Academy to determine what is fine architecture, and to exhibit such for the encouragement of the practitioner and the education of all those who are seriously interested in architecture. This would mean the exhibition of plans, geometrical elevations and sections of buildings, to the exclusion (mainly) of perspectives, but permitting sober photographs. To hang such a quantity of frames—and to hang them all at a reasonable distance only from the eye so that they might be studied—would require probably three or four rooms in place of the one at present devoted to the purpose. This, owing to the state of enthusiasm for architecture is, I admit, too much to require during the summer exhibition. But is it necessary that the architectural exhibition should be contemporary with the oil painting? I would suggest that it should be held in the winter, during the reign of the 'Old Masters,' at which time there would be no difficulty in allotting the requisite quantity of space."

Another correspondent, who does not wish us to quote him by name, considers that "plans, elevations, sections, and ½-in. scale details would be a fairer representation of the actual building (and be the real work done in the office) than the pictorial representations made by outsiders who have never had anything to do with the real study of the design."

Mr. Robson does not see how the representation of architecture at the Academy can ever be satisfactory, or conduce to the real advancement of architecture as a fine art, as long as art is constantly treated there as though it were limited to the painting of pictures, and the work of architects judged merely on that basis:—

"If drawings were selected less on the score of showy draughtsmanship, and more on grounds of

* We wrote to all the seven architect members of the Academy except one, considering that they might have individual opinions on such a subject, apart from the opinion of the Academy in its corporate capacity. Of these, Mr. Jackson and Mr. Waterhouse, as observed, have replied; of the remaining four, one is out of England; one replies that he does not, as an individual member of the Academy, wish to express an opinion on the policy of the Academy in regard to any part of its exhibition (a position which of course we quite understand); and the remaining two have not replied, perhaps for the same reason.

† In London, we presume, Mr Waterhouse means. There are two or three provincial annual exhibitions where space is regularly devoted to architecture: those of Glasgow and Liverpool at all events.

scholarly planning and artistic design, I think better results would be attained. We should less often see the places of honour given to splendid drawings illustrating mediocre architecture.

In my view, therefore, anything which would enable architects to exhibit representations of their work in such manner as they, themselves, might prefer (of course, within certain limits) were admitted, and it were not forbidden to submit plans, elevations, and sections—and even photographs—we might hope to see an impetus given to architecture such as has, under the President's initiative, already been given to the sister art of sculpture. . . . Among other things we might ponder well the Frenchman's dictum that *planning* lies at the root of all good architecture.

Until this last is recognised, I fear we shall not get far beyond the cabinet-maker's masonry, and the terra-cotta abominations which are the vices of the day."

Mr. A. H. Skipworth, after repeating the usual expression of dissatisfaction, adds :—

"I am certainly in favour of much greater prominence being given to geometrical elevations, plans, and sections. Why, too, should the everlasting gilt frame be applied to the architectural section ?

The space allotted is obviously inadequate. I have always thought that part of the lecture-room could be given up to architecture. The drawings might be hung on the walls not higher than 9 ft. from the floor, or on both sides of screens arranged in a convenient manner."

Mr. A. E. Street says that—

"As far as architects are concerned the interest and value of the Architectural Room would be increased if exhibitors were encouraged, as they were at Liverpool lately, to show their buildings as they really are, by admitting photographs of existing works, by laying stress on the importance of every representation of a building, whether pictorial or geometrical, being accompanied by a plan, and by declining to accept good draughtsmanship as a complete substitute for good design, when the work illustrated has no intrinsic merit of its own."

Mr. Percy G. Stone suggests the following as the steps he should propose in order to improve the representation of architecture at the Royal Academy :—

"1. A preference being given to strictly 'architectural' drawings and to work actually executed.

2. That drawings of old examples and 'sketches' should not be admissible.

3. That designs for the allied arts should be placed on screens in the centre of the room.

4. That a limited number of models be admitted.

5. That there should be some systematic grouping of the designs under their respective heads.

6. That a more dignified position should be found for the exhibits.

I certainly think more prominence should be given to geometric drawings. Merely 'pictorial' work does not, in my humble opinion, 'represent' the dignity of architecture."

Mr. Stone adds also that designs for stained-glass and surface decoration do not represent architecture, and that the height of incongruity seems reached in No. 1,552, "Design for a Christmas Card."

Mr. E. P. Warren seems to be of the same opinion on this last point: he says, "I should like to see designs for stained-glass, painted friezes, and sketches of old work relegated to another room, say to the existing little chamber; they should not be mixed with architecture." The point of this remark however will hardly be appreciated apart from the other recommendations in Mr. Warren's letter, which is a pretty drastic one :—

"I think the existing method of exhibition at the Royal Academy, as applied to architecture, and the arrangements which accompany the method, not only absurdly inadequate, but ludicrously unworthy of the representative artistic body of a great nation and of the dignity of the art in question.

The room allotted to architecture is preposterously small—even in relation to the size of the Academy building. One of the larger rooms should be given up to architecture, or architecture and sculpture combined ; and with the probable increase of architectural models as exhibits, this will soon become absolutely necessary.

With regard to the drawings exhibited, I am strongly in favour of plans, elevations, and sections, with a sparing use of 'perspectives'—such as bird's-eye views and marginal sketches to illustrate them. I deprecate the absurd and unworkmanlike smartness of the average exhibit—the illusive pictorial 'perspective'—and should like to see working-drawings on strainers, without glass or frames ; they are to be seen frequently in the Paris Salon. [Glazed architectural drawings are almost unknown at the Salon.—ED.] I would go further, and permit the use, under restrictions, of photographs, as appendages to plans of executed buildings ; and would welcome models of all sorts—of whole buildings, or of portions of them, and casts of ornamental details."

Mr. Rowland Plumbe reminds us that he, along with Mr. R. W. Edis, was Secretary to the old Architectural Exhibition in Conduit-street, his experience in connexion with which led him to believe that the public took little interest in architectural drawings, and his observations in the Architectural Room at the Academy lead him to the same conclusion now. He continues—

"Therefore, although I do not consider the present exhibition of architecture at the Academy satisfactory, yet I do not think the authorities, in the present state of public appreciation of our art, can be expected to devote more space, and in view of my experience I should hesitate to claim more. I think if we did, we should not be likely to get it.

I should certainly personally favour the introduction of geometrical drawings, including plans and sections, but here again looking at the probable demand there would be for such drawings on the part of the public, I should hesitate to demand the exhibition of the same. I have rather come to the conclusion that the exhibition of perspective drawings of the actual work of the time is not exactly what the Academy wants, but that they rather desire pictorial and picturesque work only, as distinguished from a representative exhibition of drawings of the buildings that may be in contemplation, or in course of building, at the time of the exhibition, and it is, therefore, only on the rarest occasions that I venture to send in a drawing. There may be a possible demand on the part of architects themselves for an exhibition of architectural drawings, but considering the full and ample way in which buildings are illustrated in the professional papers, I doubt it."

Mr. Emerson takes rather the same line. He says—

"Considering the small general interest taken in architecture, proved by the usual emptiness of the room devoted to its exhibition, I should say the space given is ample, especially as one half is generally occupied by sketches, non-serious work, or designs never likely to be executed.

But I certainly am of opinion that it would be advantageous if more geometrical drawings were admitted."

Mr. H. O. Cresswell considers that the present architectural exhibition at the Academy is anything but satisfactory :—

"If architecture is to be represented there at all it should be by proper geometrical drawings, plans, sections, &c., supplemented by perspectives ; or, perhaps, better still, by photographs of the actual work. This would give anyone who wished to know something about a design the opportunity of doing so, which the present system of pretty pictures does not. . . .

Perhaps if this system were employed more largely we might in time induce the Academy to see that it is the *design* which is the thing, and that mere pictorial effect is quite a secondary matter, especially when, as is usually the case, the picturesque accessories are mostly imaginary, and the invention of the clever draughtsman who is employed to prepare the perspective.

Of course, in considering this question one must bear in mind that the ordinary public do not care a rap for architecture or architectural drawings, and that the Architectural Room is to them a blank, and is likely to remain so, whatever means are adopted to illustrate our work."

In regard to this last pessimistic conclusion we may say that, however true it has been up to this time, we hope better things, and we are inclined to think that there is already a sign of improvement, and of some little stirring up of interest in the subject on the part of the public—slight enough at present, no doubt, but which may be capable of further development if the architectural exhibition at the Royal Academy can be put on a better basis and arranged on a more systematic principle.

Next week we will print extracts from some more of the letters we have received on the subject, and will add our own summary of the conclusions to which they appear to point.

THE NEW ROMAN CATHOLIC CATHEDRAL AT WESTMINSTER.

THE cathedral, the foundation-stone of which was laid by Cardinal Vaughan on Monday last, will be erected from the designs of Mr. John F. Bentley. Mr. Bentley is best known by his Gothic buildings, such as the new Catholic Church at Walford, the Preparatory College at Beaumont, and the seminary erected for Cardinal Manning at Hammersmith. The refitting and decoration of the churches of St. Botolph, Aldgate, and St. Botolph, Bishopsgate, however, show Mr. Bentley to be thoroughly at home with the Renaissance style. And we think it will be acknowledged that the difficulties of the Byzantine style have been overcome in the very striking design for Cardinal Vaughan's cathedral. It is true that the design is in little more than a sketch condition, but the sketches bear promise of a work of singular interest and originality.

The first idea was to build the new cathedral in imitation of "Old St. Peter's at Rome," and Mr. Bentley spent several months in Italy at Rome, Ravenna, and other Italian cities, studying the early "Basilica" churches. Although immensely interested with these ancient and beautiful buildings, he came to the conclusion that they were not suggestive of modern treatment, or specially applicable to modern requirements, especially for a London church ; much of their beauty depending upon columns and features derived from other buildings, combined together in such a way as to produce that fascinating picturesqueness so attractive to the pencil of the painter, but so unattainable in a modern building, even where much is sacrificed to pure archæology. Then the great wooden roofs of these buildings point to a kind of make-shift construction, which as has been seen in our own time at St. Paul's, Rome, renders the building an easy prey to fire, and it is certainly absurd at the present day to cover the walls of a building with rich and costly decoration without attempting to render it fire-proof.

On the other hand, the churches of St. Mark, Venice, the cathedral at Murano, St. Vitalis, Ravenna, and St. Ambrogio at Milan seemed to Mr. Bentley to offer admirable suggestions for modern church architecture, especially in a case where it was considered inadvisable to copy the Gothic of the thirteenth, fourteenth, and fifteenth centuries, so Mr. Bentley determined to advise his clients to give up the Basilica idea, and it is greatly to the credit of Cardinal Vaughan that he consented to do this, as it is an example of that kind of understanding and confidence which ought to exist between client and architect, but which, unfortunately, is too frequently absent.

The general idea of Mr. Bentley's scheme is a vast nave of 60-ft. span and 280 ft. long, covered by four segmental domes, supported upon semi-circular arches, which rest upon vast oblong piers set at right-angles to the axis of the nave. Three out of four of these great square bays will be subdivided into two by arches, which will give a subsidiary pier between the great ones, a treatment which may be seen at St. Ambrogio at Milan, Spires and Worms cathedrals, &c.

The clearstory does not rise above the inner wall of the aisles, but above the outer ones, so that the aisles are practically *inside* the nave, and are made to support galleries. A second subdivision takes place in the aisle arcades, so that there are four arches opening into the aisles from the nave in each bay. The great piers, which are the whole depth of the aisle, are pierced through both at the level of the aisle and of the gallery. A row of large chapels flanks the aisles to the north and south.*

The fourth bay is not subdivided, but its galleries are so, and in the third bay the pilasters are lengthened out in a north and south direction, so as to form transepts vaulted in two spans of barrel vaulting.

The fourth bay will form the sanctuary of the church. The high-altar, which will stand near to its eastern extremity, will be placed beneath a simple baldacchino of very early form, and stalls for the canons, clergy, and assistants will be ranged along the sides

* We are here speaking as if the church was built *east and west*, but, in point of fact, the axis is *across* the cardinal points of the compass, as in so many of the Italian churches.

near to its western end. The throne for the Archbishop will be on the north side, east of the stalls.

To the east of the high altar will be the monk's choir, it will open into the church by an arch about 60 ft. high (the extreme height to the vaulting of the nave measuring into the domes will be 105 ft.). The monk's choir will be raised upon a crypt, as at St. Ambrogio at Milan, and will contain stalls for forty ecclesiastics; this choir will be roofed with a barrel-vault, and will terminate in an apse. The crypt will be visible from the nave, and will open into the canon's choir by four arches, as at St. Ambrogio and at San Zenone, Verona.

Between the two choirs, just behind the baldacchino, there will be suspended an immense wooden cross upon which the Crucifixion will be painted; in fact, nearly all the decoration will be *flat*, the only carving used internally being in the capitals, which will be very rich and in deep relief. As high as the galleries the church will be lined with slabs of marble set so as to reverse the grain, but above this the whole will be encrusted with mosaics, partly figure work and partly in arabesque: upon the flanks of the great pilasters there will be inscribed marble slabs, so that the pictures above them may be either monumental or "votive" gifts. The baptistery will be at the west end of the south aisle, and a lofty campanile, 30 ft. square and 300 ft. high, will stand at the north-west corner. The great doorway will be very deeply recessed and adorned with carving and sculpture, but the rest of the exterior will be simply and plainly treated, and constructed of alternate bands of stone and red brick. A rather striking and very large staircase turret will stand at the corresponding situation to the campanile. Every effort will be made to get the structural portion of the building completed as soon as possible; the mosaics will be carried out as funds accumulate for that purpose.

Although some may regret that the church is not to be Gothic, yet we are of opinion that the experiment of attempting to apply the Byzantine style to modern church architecture is both valuable and judicious, as it lends itself to mosaic or painted decoration far better than any other style of building, and can be made effective without cutting up the great spaces; cornices and mouldings can be dispensed with, and those sunk panels which drive the decorative painter mad, as they are certain to cling to the figures in such a way as to make them look uncomfortable, may be omitted. We shall watch this new departure in ecclesiastical art with considerable interest, and probably give notes and sketches from time to time.

NOTES.

AT University College there is a whole gallery at present filled with objects of what Dr. Petrie is pleased to call a new race; a race which flourished about 3,000 years ago, and which then passed away. The sepulchres and the tombs have been made to reveal, by excavation, the history of this hitherto unknown people, and the mass of objects of all kinds spread out for inspection show to some extent what kind of men they were. That they were foreigners to the soil of Egypt, and indeed, apparently to Africa, is plain enough, for a series of human remains exhibited show clearly enough that the facial features possessed none of the traits either of the negro or of the Egyptian. The articles used in their daily life, too, are not Egyptian, and a spectator must be struck with the remarkable differences between what is exhibited and those of Egyptian origin which have been shown at previous exhibitions. Here are great numbers of pottery objects, not turned on a wheel, as was the case with the pottery of the still earlier Egyptian race whom these "new people" supplanted, but all made by hand. There is bright red ware; other objects have a dark metallic tint at the tops; others have painted spirals on a dull brick-colour ground. There is visible, indeed, a progress and a decadence in the articles which goes to prove the long continuance of the race. The personal ornaments are all of novel form, and of much interest to ethnological students, who have in these objects an admirable field for the study of resemblances and differences with the works of people widely remote from Egypt. A rudely-made vase in the form of an animal would be considered as of Peruvian make but for the known place of its discovery. The site of the discoveries is about thirty miles north of Thebes. The collection is open free from ten until six, and it will continue open until July 27. A clearly-worded catalogue, sold at the moderate price of sixpence, affords lucid information as to the discoveries, pending the publication of a more ample description. Not only are the objects discovered by Dr. Petrie exhibited, but also those found in the same district by the new Egyptian Research accounts. As on former occasions, the liberality of Mr. Jesse Haworth and Mr. Kennard has been the means of procuring this important addition to the history of Egypt.

THE Prime Minister cannot be altogether congratulated upon the appointments in his Government with which the readers of this journal are chiefly concerned. The First Commissioner of Works, Mr. Akers-Douglas, is, no doubt, an admirable political organiser and an excellent party "Whip." But he has had no administrative experience, and has never shown any indication of gifts which would fit him for his new position. The appointment again exemplifies the need for the establishing of a non-political Council to control the public buildings of London which are under the control of the Government. When we come to the Local Government Board we find Mr. Chaplin as President, and Mr. T. W. Russell as Parliamentary Secretary. Mr. Chaplin is a Tory of the old school, and we cannot think of him as having sympathy for sanitary progress, nor has he ever shown any vigour as an administrator. Mr. T. W. Russell is well known as a striking platform speaker on political subjects, but he has certainly never given special attention to many of the subjects which are under the control of the Local Government Board. But as he is vigorous and fearless, we hope that he may not allow any slackness on the part of his office.

EARTHQUAKES in Great Britain, though fortunately infrequent and seldom formidable, should be systematically studied and recorded, in regard to intensity and direction of shock, time of occurrence, and other circumstances connected with them, in order to throw additional light on this class of phenomena, especially as affecting our own country. With this object, Mr. Charles Davison, of 373, Gillott-road, Birmingham, has been for some time collecting and formulating all the information he has been able to obtain from the experience of those who have felt and observed earthquake shocks in this kingdom. In order to aid in the more careful observation and description of earthquakes, Mr. Davison has drawn up a short paper of suggestions which he will be glad to send to any one who wishes for it, and will communicate with him. He observes that the points most worthy to be attended to are the following:—"1. Name of the place where the shock was felt; 2. Day and hour at which it was felt; 3. Nature of the shock; 4. Whether it was strong enough (*a*) to make doors, windows, fire-irons, &c., rattle, (*b*) to cause the chair, &c., on which the observer was resting to be perceptibly raised or moved, (*c*) to make chandeliers, pictures, &c., swing, or to stop clocks, (*d*) to overthrow ornaments, vases, &c., or cause plaster to fall from the ceiling; 5. Whether the shock was accompanied by any unusual rumbling sound." We should have been disposed to add, direction in which the shock appeared to travel. In the only at all marked shock of earthquake which the writer remembers to have experienced in recent years in England, the direction of travel of the disturbance was quite recognisable, the sound made by it being heard approaching from one quarter and receding in the opposite quarter. This was in the middle of the night, when the rumble of the earthquake before the shock was actually felt was much more audible than it would usually be in the daytime.

THE business meetings of the International Railway Congress commenced on Monday, but that day was mainly spent in preliminaries of organisation. On the two following days the subjects mainly considered were the settlement of disputes, acceleration of goods traffic, the contributive traffic from light railways, and the question of the general adoption of a twenty-four-hours day. This latter subject is of interest to all travellers and to all engaged in correspondence and telegraphing to distant places. In a report circulated among the members, drawn up by Messrs. Scolari and Rocca, appointed for the purpose by the St. Petersburg Congress, it is stated that a time-day from 1 a.m. to 24 o'clock at the succeeding midnight was adopted forty years ago in the kingdom of Sardinia, and United Italy adopted it in 1893. The twenty-four-hour notation has been in use on the Canadian lines for several years, and for a much longer period on the East Indian railways; but in the United States, in spite of a vigorous agitation in its favour, it has not yet been adopted except on the Union Pacific and Florida lines, but the American representatives believed they could get it adopted at once in the States if a vote of the Congress were given in its favour. The Western Union Telegraph wrote that the adoption of the system would greatly reduce the risks of error, and "would save the transmission of 150,000,000 letters annually." The afternoon of Wednesday was spent by the members in excursions by railway to Southampton, Battle, St. Leonard's, Hastings, and Canterbury. A reception at the Imperial Institute on Tuesday evening was very largely attended, and the great quadrangle of the building was glorious with myriads of coloured lights, presenting a beautiful effect. The Hungarian band performed in the main hall, and Strauss's band in the quadrangle; refreshments were provided on a liberal scale, and the whole thing was very well done.

THE annual Congress of the British Archæological Association, which will take place in the week commencing Monday, August 12, promises to be of considerable interest. The first meeting will be held at Trentham, when the members will inspect the site of the ancient church, and visit Trentham Hall, and an early earthwork on the Duke of Sutherland's estate. On Tuesday headquarters will be at Leek, and the Cistercian Abbey of Dieu-le-Crêss will be visited. On the Wednesday Lichfield and Tamworth will be the centres, the main objects being Tamworth Castle and the Church of St. Editha, and in the evening, at Stoke, Mr. E. Loftus Brock will read a paper on "Old Staffordshire Pottery." On the Thursday the neighbourhood of Hawkstone will be inspected, including the supposed Roman camp site at Chesterton, Heighley Castle, the British camp known as Bay Walls, &c. On the Friday visits will be made to the castle and British camp at Alton, and to Croxden Abbey and Checkley. On the closing day attention will be given to Thorpe-Ilam, and Blore, including the churches and pre-Roman crosses at Ilam.

THE Architectural Association Excursion, which starts on the same day and occupies the same week, will be mainly a Gloucestershire excursion, and promises to be a very interesting one. On the first day Southam and Portlip Manor House and and Bishop's Cleeve Church will be visited; on the Tuesday Tewkesbury, and Strensham Church; on the Wednesday Chastleton, a

very interesting old mansion; on the Thursday Broadway, Buckland, Stanton, and Stanway; on the Friday Sevenhampton, Charlton Abbots, and Winchcomb, and on the concluding day Gloucester Cathedral, as well as houses of interest in Gloucester.

WE have received, by the last mail, particulars of some experiments which are now being carried out in America, for the purpose of ascertaining the relative crushing strength of machine-mixed and hand-mixed concrete. So far the results are undoubtedly surprising. Hand-made concrete (1 cement to 12 aggregate), at the age of one week, was only one-half the strength of concrete which, in addition to the hand-mixing, had been turned 50 times in the mill, and only one-third the strength of that which had been turned 350 times. Sufficient tests have not yet been made to settle the point conclusively, but further experiments, extending over some months, are contemplated, and we hope to be able to give our readers full particulars in due course.

THE last circular from the Emigrants' Information Office reports very badly of the demand for labour in most of the Colonies, especially in regard to operative trades. Whether in Canada, Australia, or South Africa, the report is the same—"no demand for mechanics." The Superintendent of the Government Labour Bureau at Sydney recently reported that there were from 8,000 to 10,000 persons unemployed in that city and the suburbs, and that others in search of employment were coming in from country districts. In New South Wales the long-continued troubles at the collieries are at last settled to all appearance, the miners having resolved that all strikes should cease, and that terms should be made with the employers. This is almost the only favourable news in a generally very discouraging document. It is clear that emigration to the Colonies offers no outlook at present for superfluous labour in the building trades.

IN his last four-weekly report on the sanitary condition of Kensington, Dr. Orme Dudfield draws attention to the provisions of the compulsory section [60 (4)] of the Public Health (London) Act, which enforces on the Sanitary Authority the duty of providing, free of charge, temporary shelter or house accommodation, "with any necessary attendants" (we confess we do not understand the precise drift of this rather vague sentence), for members of a family in which any infectious disease has appeared, and who have been compelled to leave their dwellings for the purpose of their being disinfected by the Sanitary Authority. Dr. Dudfield states that he called the attention of his Vestry to this subject as long ago as 1890, but that nothing has been done. In December last the Medical Officer of Health to the London County Council prepared a return showing how far this provision had been carried out by twenty of the District Sanitary Authorities of London, but urging that as the disinfecting process generally occupied many hours, the temporary shelters, to be efficient, must provide for night occupation and sleeping accommodation, and that in many of those already provided this was not the case. Dr. Dudfield goes on to state that during the year 1894 some sixty-four cases of infectious disease occurred in families occupying single rooms, which rooms were closed for twenty-four hours, necessarily putting a number of poor persons to great inconvenience. It is to be hoped that the Kensington and other Vestries will recognise the importance of this subject, and also bear in mind that they are bound by law to provide this accommodation. To this fact some of them seem to be alive, though not in the right spirit, as it appears from Dr. Dudfield's report that while he is urging compliance with the law on his own Vestry, a circular letter has been sent to various Vestries inquiring if they are in favour of the repeal of the enactment in question, with the evident object of getting up an agitation to get rid of a responsibility which the State has very properly imposed upon them.

FOR some three or four months past the Manchester, Sheffield, and Lincolnshire Railway Company have been busy with a demolition of property which obstructs the course through Marylebone and Hampstead parishes of their extension line to London. In their Act of 1892 were scheduled what is known as the Boscobel-gardens site, Alpha-road, Lorne-gardens, and Grove-gardens (formerly South Bank), together with Blandford-square, Harewood-square, Boston-street, Balcombe-street, and many other thoroughfares in that neighbourhood. The school-house, next east of Lord's Cricket Ground, of the Clergy Orphan Society is now nearly destroyed; similar clearances are being made along the western side of Wellington-road, and between Marlborough Hill and Loudoun-road, and along that same side of the Metropolitan Railway line up to and including a large portion of Broadhurst Gardens, at West Hampstead; the entire north side of Grove Gardens has been pulled down, together with the eastern portion of North Bank (north side), for the diversion of that thoroughfare by a new road to enter Lodge-road. With the two squares we mention above will disappear the two homes of Sir George Hayter, painter, and of George Eliot. The latter, with Lewes, took, in September, 1860, a furnished house, No. 10, Harewood-square, whence, after three months or so, they removed to No. 16, Blandford-square, where "Romola," "Felix Holt," and "Silas Marner" were written. In November, 1865, they went to the Priory, North Bank, where they remained until Lewes's death in 1878. In that interval George Eliot composed "The Spanish Gypsy," "Daniel Deronda," "The Legend of Jubal," "Theophrastus Such," and "Middlemarch." After G. H. Lewes's death she quitted the Priory, and with her husband, Mr. Cross, resided for the last two years of her life at No. 4, Cheyne-walk, Chelsea. At the Priory, which is not yet dismantled, her study was on the upper floor, Lewes's on the floor beneath. We gather that the new line will run in two tunnels, side by side, for the portions between Broadhurst-gardens and Circus-road, and between Wellington-place and Lodge-road, thus passing beneath the addition of 8,640 square yards, that is to be made to the M.C.C. Cricket Ground, and beneath the site of the former field, by the "Eyre Arms" Tavern, where was held a rehearsal of the Eglinton tournament, 1839. Lough, the sculptor, lived in Harewood-square; No. 41, Alpha-road was the last home of Lamb's sister, Mary; in South Bank Voelker, with Bentham's help, opened the gymnasium, which he afterwards transferred to what was then No. 1, Union-place, New-road (now opposite Marylebone Church), and of which Cruikshank made a sketch for Hone's "Every Day Book," vol. i. On the other hand we notice that building operations have been begun, for six blocks of dwellings, upon the large space which has been cleared between St. John's Wood-road, Grove-road, and Cunningham-place, an area which includes the sites of houses in those three roads, and that of the old Red Hand Farm, or Barn, in which, as altered to meet his own requirements, Sir Edwin Landseer lived from 1825 until his death in 1873.

LETTER FROM PARIS.

ON Monday last took place the annual formal distribution of "récompenses" awarded to artists exhibiting at the old Salon, which, as well as the Champ de Mars Salon, closed on the evening of the same day. This double closing will render a certain number of new works available for their intended positions in the Hôtel de Ville. The "Halles" of M. Lhermitte will find place in a room—unfortunately too small for it—near the room decorated by M. Binet with scenes of the Siege of Paris. M. Roll's "Joies de la Vie," which gives such a very synthetic view of the possible joys of existence, will go to decorate the large reception salon opposite that of M. Puvis de Chavannes. The friezes by MM. Bonis and Henri Martin will take their places in rooms situated at the ends of the large Salle des Fêtes. This last-named room has just received the large ceiling by M. Benjamin-Constant which has gone through so many vicissitudes. The artist commenced by making a sacrifice to what he considered as the prevailing taste of the day, in a large composition of confused design and far too blue in colour. Then it was objected to him that what was wanted was a work in his own style, and not an imitation of M. Besnard. This time M. Benjamin-Constant himself undoubtedly appeared, with all his special qualities as a colourist, in the glory of a ceiling in which red predominated, and which was conceived in the style of the Venetian ceiling-paintings, and represented "The City of Paris seated on a Trireme and receiving the Nations invited to her Fêtes."

Various artistic works not included in the general scheme of decoration of the Hôtel de Ville, are to be undertaken there shortly, if the Municipal Council approve the recommendations of the Fine Art Committee. One of these is a large allegorical bas-relief intended for the "Siège de Paris" room, the execution of which is to be entrusted to M. Puech. It represents or symbolises a kind of pacific apotheosis of the City of Paris. In the "Salle des Cariatides" M. François Flameng is to execute a series of tympanum decorations symbolising the various quarters of Paris. Lastly, in the galleries called those of "the Tourelles" M. G. Dubufe is to execute a series of cupolas ornamented with figures on a background of verdure.

Besides the works intended for the Hôtel de Ville, the closing of the Salon will also set free the decorative paintings intended for the Mairies of Alfortville, Maison-Alfort, and Bagnolet, painted respectively by M. Arus, M. Debon, and M. Pierre Vauthier.

The inauguration took place last week of the monument to Henri Mürger, in that part of the Luxembourg Garden near the Odéon, and not far from the monument to Théodore de Banville. M. Bouillon, the sculptor of the monument to Théophile Gautier, at Tarbes, has executed the Mürger monument, which is composed of a granite stele decorated with carvings of roses, and surmounted by a bronze bust of the poet, a singing bird beside it. It is proposed to put up other busts on this charming site, making it a kind of poets' corner. Théophile Gautier and Hegesippe Moreau will probably be among those thus commemorated.

Last week witnessed the formal opening of the exhibition of Hygiene installed in the Palais des Arts Libéraux, at the Champ de Mars, but which is by no means complete yet. The exhibition is under the patronage of the State, of the Department of the Seine, and of the City of Paris, and was formally opened by the President of the Republic. It is classified in ten main divisions, sub-divided into five groups. The word "hygiene" in itself sufficiently indicates the general scope of the exhibition, which includes exhibits referring to the habitation, to infectious diseases, demography, sanitary statistics, industrial and professional hygiene, to the care of infants, the sanitary quality of clothing, and to physical exercises. We may observe that the organisers of the exhibition have taken the opportunity to render homage to illustrious sanitarians now dead by placing in a conspicuous position the busts of Belgrand, as the originator of the Paris sewer system, Alphand, as the creator of its parks and squares, and Durand Claye, as the promoter of the agricultural utilisation of sewerage.

This exhibition is to be accompanied, it appears, by scientific lectures on sanitary subjects. It may be suggested that the "hygienists" should take this occasion to come to some practical conclusion in regard to the often-debated subject of the "odeurs de Paris," a subject which raises new discussions and recriminations with each annual recurrence of the dog-days. It is unquestionable that on hot summer evenings, when one would gladly inhale at least pure air, the ill-smelling breeze which creeps through Paris is a nuisance which pursues the inhabitants even into the interior of their houses. Sanitary engineers and doctors have for twenty years back complained of this infliction, and the evil increases in spite of the six million francs spent every year on the cleansing of Paris. It seems to have been found impossible, so far, to suggest the remedy for a

discovery of the origin of this nuisance, and whether it arises from putridity absorbed into the soil of Paris itself, or is due to the unhealthy condition of some of the suburbs which are occupied by insanitary factories and industries; but we incline to the latter hypothesis. The factories of manure, of sulphate of ammonia, and of bone-black, situated in the outskirts, are amply sufficient to maintain this state of things. But to these principal causes we must add another, viz., the bad state and choked condition of the sewers in certain quarters. Speaking generally, it is from the suburbs that all the mischief comes, and the responsibility of the situation rests with the Prefecture of Police, which could bring about an improvement by exercising more strict supervision over unhealthy manufactures. In the district between Neuilly and Pantin, from the west to the north of Paris, there are no less than 119 establishments in which unwholesome and putrifying substances are treated and kept in conditions absolutely unsuitable, and often in the open air. Many of these establishments exist in the neighbourhood of La Villette, especially the "Fonderie Parisienne," where all the off-scouring of the butchers' business is collected; and as in Paris the wind frequently blows from that quarter, the smells are brought directly into the centre of the city by way of the long streets, Rue d'Allemagne, Rue de Flandres, and Rue Lafayette, which form a sort of in-draught chimney in the direction of the Opéra.

It is the business, therefore, of the Prefecture of Police to put into strict application the severe regulations in regard to the establishment and working of businesses which are dangerous, unwholesome, or even simply disagreeable. This is what the sanitarians who are going to assemble at Paris ought to make a formal demand for, so that the foreign visitors who come to Paris for the 1900 exhibition may not make acquaintance with a state of things which is at present a disgrace to Paris.

The City of Paris is going to contribute 20 million francs towards the expenses of the 1900 exhibition, instead of 8 millions, which they allotted to the last exhibition. The military engineers have just been taking down all the small buildings around the fortifications of Paris, on what is called the "Zône de Servitude Militaire." These demolitions, which are not justified by any defensive necessity (especially as, with the modern guns, the Parisian fortifications are absolutely useless), have been much criticised. It is greatly to be regretted that the military authorities have given way to an unfortunate partiality. Whilst they have destroyed without pity the wretched hovels of Gentilly or Glacière, inhabited by very poor people, they have left intact, opposite the Porte Maillot at Neuilly, an enormous panorama, in which M. Poilpot has illustrated the arrival of the Russian squadron at Toulon 1893. It is only a question of a few months, it is true, but the military authorities would have done well to have put off to the same period the demolition of the poor houses, whose occupants are now without shelter. As for M. Poilpot's panorama, destined for the exhibition at Nijni-Novgorod, it is well painted, and represents the visit of President Carnot and Admiral Avelon on board the *Nicolas I.*

The open competition of the "Union Centrale des Arts Décoratifs," for a Collector's Cabinet, has only produced a mild result. Twelve artists took part in it, and the prize was awarded to MM. Georges Rémon and Eugène Morand. Their scheme, however, wants simplicity, union, and purity of taste. Thanks to the generosity of Baron Edmond de Rothschild, the Louvre Museum has had a great addition in the shape of a magnificent Roman silver treasure, which has been recently discovered near Pompeii, at Bosco-Reale. This treasure dates from the first century A.D., and is composed of several pieces, excellent alike in their style and workmanship. Especially noticeable is a vase upon which is engraved a dance of skeletons, with the names of Aristophanes, Euripides, and other ancient poets. There is also a peg with a head delicately carved on it. These things are all signed by an artist of the name of Sabaïnos.

Every year at this time there is an exhibition at the Ecole des Beaux-Arts of students' work from Rome. This year the sculpture leaves much to be desired. We do not care for M. Gasq's "Medea," the "Sleeping Virgin" of M. Sicard, or the great composition of M. Octobre representing "Vice and Virtue." One must consider these exhibits as good works by pupils still at school, but wanting entirely in inspiration and emotion. The bas-relief which M. Lefebvre calls "The Avenger" is less commonplace. In painting we may mention, without praise, the "Jeunesse et Chimère" of M. Lavergne and the "Enterrement de Léon III." by M. Devambez. On the other hand, we must compliment M. Lavalley on his delicately drawn and coloured nude study called "Flore."

In the architectural section we may mention the beautiful studies on the Acropolis of Pergamos sent by M. Poutremoli, student of the fourth year; those of M. Eustache, pupil of the third year, on the temple of Castor and Pollux at Rome; the interesting series of drawings which M. Bertone (third year) has executed at Pompeii and Rome; and finally, the restoration of the Temple of Mars Ultor at Rome by M. Chaussemiche, pupil of the first year. At the Ecole des Beaux-Arts the diploma of "Architecte du Gouvernement" has just been awarded to MM. Gougy, Tussau, Uhry, Fabre, Poupel, Jaboulay, Friedlander, Rousseau, Guichard, Van-Dorsser, Hale, Sottar, de Belie, Van Pelt, Delaunay, Mottar, Gossart, Marquet, and Charbonnier.

There is a talk of a mosque being built in Paris. This building, which is wanted on account of the increase of Oriental population residing in the capital, is being considered by a committee of men, political, literary, and artistic, among whom we may mention the names of the painter Benjamin-Constant, and the architects Ambroise Baudry and Saladin. The latter is the architect of the graceful Tunisian palace which decorated the Esplanade des Invalides in the exhibition of 1889.

Another piece of news will particularly interest the English public, as it is a project to erect a statue to Isaac Newton in Paris. The idea of erecting this monument is due to two members of the Municipal Council, MM. Pierre Baudin and Vorbe, who wish to "make known, and respected the great laws of continuity and solidarity, which make mankind *one* in time and space." MM. Baudin and Vorbe wish that the statue should be erected by an Anglo-French subscription, and they propose to invite England to unite with Paris to honour the genius of Newton, by a scheme which will place the amount of the subscription within the means of the most humble workers in science, in order that the monument might be an essentially popular one, or in their own words "The indestructible symbol of the three-fold union of feeling, intelligence, and industry, and that it may remain among us as a perpetual homage to science on the part of the people at large."

THE CENTRAL LONDON RAILWAY.

THE proposed Central London Railway, for the construction of which the public have just been invited to subscribe 2,850,000*l.*, is an undertaking of considerable magnitude, and one which, if carried out, will offer great conveniences to the large number of people living in the West-end. Commencing at Shepherd's Bush, the new railway would run in almost a straight line to the Mansion House, a distance of 6½ miles, passing below the Uxbridge-road, Oxford-street, and Holborn. Like the City and South London Railway, from the Monument to Stockwell, it would consist of two tunnels, placed close together, often at a considerable distance below the surface of the ground.

These tunnels it is proposed to construct by means of a shield similar to that now being employed so successfully at the Blackwall Tunnel, so that no interference with the streets under which the line passes will be necessary, except, perhaps, where the stations occur.

There are to be altogether fourteen stations, that at the Mansion House, the site for which is below the open space in front of the Royal Exchange, forming one of the features of the new railway. Here the Company undertakes to construct, in addition to the station, a subway for foot-passengers, connecting together the various streets terminating near this point. This, of course, will be an immense improvement, since it will afford greatly increased facilities for the pedestrian traffic.

Electricity is to be the motive power, it being now demonstrated that this is more economical and better suited than steam for such purposes. At the last meeting of the shareholders of the City and South London Railway it was stated that the cost of electrical traction on their line was rather under fivepence per train mile, and this compares very favourably with the cost of steam-power, which amounts to about ninepence per train mile on the large railways throughout the kingdom.

The new railway will no doubt benefit by the experience gained in the construction and working of the City and Southwark Railway. For example, one of the minor points which that railway illustrates is that even a divided tunnel and electric traction do not ensure perfect ventilation, although the atmosphere is much purer than that of the old underground railway. They will also have the experience gained in the constructing of some 3,000 ft. of the City and Waterloo tunnels, and will not fall into the error of assuming that they can burrow, even at a depth of 100 ft., under private buildings with impunity.

The tunnels of the new railway will be larger than those of the City and Waterloo, and this compels the constructors to build one of them underneath the other when they are under the narrow streets of the City. Shepherd's Bush is at present a centre from which a great many tramway lines radiate; hence, people living at Acton, Hammersmith, &c., will be able to travel the first part of their journey in the open air, and then by electric underground where the crowded streets make tramways impossible. We understand that the trains are to succeed each other every two or three minutes, and that a uniform fare of 3d. for first-class and 2d. for second-class passengers will be charged.

It, of course, remains to be seen whether the new undertaking will be a commercial success. The traffic throughout the day is likely to be of a much more uniform character than that carried by the City and South London line. The financial prospects of this latter company have, however, considerably improved lately, the directors being able to pay a dividend of 1¼ per cent. last year on their consolidated ordinary stock, this distribution being double the amount available for this purpose for the preceding twelve months.

SKETCHES OF AMERICAN HOUSE ARCHITECTURE.

THESE two sketches, by Mr. E. Eldon Deane, furnish illustrations of the type of picturesque small house in which the American architects, of late years, have shown so much versatility. They are from the designs, respectively, of Mr. W. R. Emerson and Mr. Sidney V. Stratton.

The circular block in Mr. Stratton's house, partially carried on rude stone columns in the ground story, has a great deal of originality of effect. It may, perhaps, be questioned whether such a form is very convenient for the arrangement of the rooms internally, but it is, at all events, an agreeable variety in the treatment of a house.

ARCHITECTURAL ASSOCIATION SUMMER VISITS:

II.—AUDLEY END.

BETWEEN thirty and forty members of the Architectural Association visited Audley End on Saturday last, under the guidance of Mr. Francis Hooper, to see what remains of the famous house erected in 1603 by Thomas, first Earl of Suffolk, and called by him Audley End in honour of his maternal grandfather, Sir Thomas Audley, K.G., afterwards Lord Chancellor and Baron Audley, of Walden. Although a comparatively small part of the original building, the existing work at Audley End is sufficient to establish a high place among the great houses of the early English Renaissance, the hall especially being one of the finest of its type. The house occupies the site, and was paid for out of the revenues of the wealthy Benedictine abbey, originally established as a priory by Geoffrey de Mandeville, Earl of Essex, in the reign of King Stephen, and part of the old monastic establishment, now called the Priory, is still extant in the agent's house.

After seeing Audley End, the return was made through the neighbouring town of Saffron Walden, a town which, for its size, contains an exceptional amount of interest for the architectural visitor. Modern work by Norman Shaw, Nesfield, and Edward Burgess, many examples of old plaster and half-timber work, and a very fine church of fifteenth and sixteenth century date, furnish a varied and sumptuous bill of fare for the sketcher and student, and the fag end of a Saturday afternoon seemed all too short for those who would fain have lingered, but had to return to town.

ELECTRIC CLOCKS.—The Synchronome Company (Birkenhead) send us a catalogue and price-list of electric clocks on the synchronome system, which is said to be the result of some years of study and experiment. The aim is to dispense with the complicated mechanism of the ordinary clock, and "to secure reliability and timekeeping qualities never before attempted."

W. R. Emerson. Archt

Sidney V. Stratton. Archt

Sketches of American House Architecture.

THE ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS:

ANNUAL MEETING.

THE twenty-second annual meeting of the members of the Incorporated Association of Municipal and County Engineers was held at Halifax on Thursday, Friday, and Saturday, June 27, 28, and 29. The proceedings were opened in the Council Chamber of the Town Hall, Halifax. On Thursday morning, when there were present nearly a hundred members of the Association, including Messrs. R. S. Escott, of Halifax, the President elect; W. Weaver, Kensington; C. H. Lowe, Hampstead; C. Jones, Ealing; J. Patten Barber, Islington; Savage, East Ham; N. Parr, Brentford; R. Godfrey, King's Norton; J. T. Eayrs, West Bromwich; F. S. Button, Burnley; Clarson, Tamworth; J. Cartwright, Bury; H. Percy Boulnois, Liverpool; J. Lobley, Hanley; W. H. White, Oxford; A. Creer, York; J. H. Cox, Bradford; A. T. Davis, Shrewsbury; E. P. Hooley, Nottingham; E. G. Mawbey, Leicester; C. F. Wike, Sheffield; S. S. Platt, Rochdale; T. W. Stainthorpe, Eston; R. F. Vallance, Mansfield; T. Cole, Westminster, Secretary, and others.

The members were received by the Mayor (Alderman M. Booth), who offered them a very hearty welcome to the town, and said that his pleasure in receiving the members was enhanced by the fact that Mr. Escott, the Borough Engineer of Halifax, was to be President of the Association this year.

Mr. C. H. Lowe, Vice-President, of Hampstead, who presided in the unavoidable absence of Mr. A. M. Fowler, the retiring President, who was engaged at a Local Government Board inquiry at Brighouse, returned thanks to the Mayor for the welcome accorded by him to the Association. He also expressed regret at the absence of the retiring President.

Mr. T. Cole, Secretary, then read the annual report, which congratulated the members on the fact that the Association continues to make satisfactory progress, not only in the increase of members, but in the increase of usefulness. During the financial year ending April 30th, seventy-three new members had been enrolled, including fifty-six ordinary members and seventeen graduates. Seven members had resigned, fourteen names had been written off, and the deaths of several members were deeply regretted. The roll now stood as follows:—9 honorary members, 570 ordinary, and 67 graduates, making the total number 646—an increase of 47 on the preceding year. There was a balance in hand on April 30 of 235*l.* 14s. 4d., and the position of the Association continued satisfactory. Since the last report two examinations had been carried out—the first at Birmingham, when eighteen candidates were examined, and thirteen satisfied the examiners and received their certification; and the second at the Institution of Civil Engineers, Westminster, when nineteen entered, of whom thirteen satisfied the examiners. Mr. E. R. S. Escott had been elected President, and Messrs. A. R. Binnie, London County Council; C. H. Lowe, Hampstead; and O. C. Robson, Willesden, Vice-Presidents.

Mr. Lowe, Hampstead, in moving the adoption of the report, said that the Council thought that the members must be satisfied with the position of the Association. The members had increased and the funds were in a satisfactory position. The Association had now come of age, and there was no doubt it had done good work in the past and would do good work in the future.

Mr. Savage, East Ham, seconded, and the report was adopted; and a vote of thanks was also accorded to the retiring Council for their services to the Association.

Mr. C. H. Lowe, in vacating the chair for the incoming President, expressed the hope that he would have a successful year of office.

Mr. C. Jones, Ealing, then proposed a vote of thanks to Mr. A. M. Fowler for the zeal and ability which he had shown during his year of office. He remarked that Mr. Fowler was one of the first members of the Association.

Mr. C. H. Lowe (Hampstead), who seconded, said that members who had attended the meetings could not but be impressed with the amount of vigour and energy which Mr. Fowler had thrown into the proceedings.

The vote of thanks was accorded with acclamation.

The President (Mr. Escott) then delivered his presidential address. At the outset he thanked the members for the honour which they had conferred upon him. While he felt the greatness of the honour, he felt still more deeply the greatness of the responsibility. Perhaps no subject of late years had called forth more attention and consideration than sewage disposal, and engineers representing inland towns had found it extremely difficult to produce an effluent suitable to be discharged into any pure water river or stream. Throughout the length and breadth of the country they heard of Rivers Conservancy Boards being established, with powers granted by Parliament equal to, if not surpassing, the provisions contained in the Public Health Act, 1875. They gathered also from the proceedings that had already been taken that Local Authorities would no longer be allowed to discharge the raw sewage of their districts into any stream flowing through the same. The present Act of Parliament had for years given Corporations and Local Boards all the powers necessary to deal with this important subject, yet the progress made in our manufacturing towns to obtain the desired effect had not met with the success which many of them had looked for. It, therefore, still remained for the Municipal Engineers to persevere in this difficult yet interesting branch of the profession, and not for a moment to think of giving in until the streams of every valley were flowing with clear, bright, and pure water from source to ocean. How was this to be accomplished? It was thought by many that every available piece of land should be purchased for land filtration, and where land could be obtained at a reasonable price per acre it might be advisable to secure it, yet this, in his opinion, was only a minor point for consideration. No doubt, they all agreed that clear and bright effluent could be produced by land filtration where they had a sufficient area, yet he contended that the bright, clear, and pure effluent could be produced by chemical treatment, and by precipitation tanks, of such a standard of purity as to justify its discharge into every river or stream in the country. The extent of land required must be determined by circumstances; one acre per thousand of the population, or even half an acre for that number, must, in many cases, be quite out of the question, for it was quite evident that in the very near future, with science and chemistry combined, the land required would be reduced to a small area, and that a town with 100,000 population would not require one-twentieth part of an acre per thousand for the treatment and disposal of its sewage. It was with regret that he was unable to place before the meeting any definite standard of purity for sewage effluents. They were left very much to their own resources upon this difficult subject. A pure effluent must be produced, yet the analysis of such effluent that would give satisfaction to the Rivers Conservancy Board was at present unknown to them. Combined drainage was another subject of importance that had received considerable attention of late. It was to be hoped that the law relating to this matter would be altered, for all must have noted with regret the poor progress made with the Amending Bill in the present Session of Parliament. The Bill had been systematically blocked upon every occasion, so that no further attempt had been made to carry the Bill through Parliament. With respect to hospitals, Municipal engineers were often called upon at very short notice to prepare plans, and to erect fever and small-pox hospitals. Where the costs of such buildings were defrayed out of the rates, there was not much difficulty to contend with and no time was lost in executing the works. But when the intended erection comprised a permanent administrative block for the medical officer, officials and staff, nurses' wards, &c., and an application was made to the Local Government Board for sanction to borrow money for the erection of such buildings, the question became one of considerable importance. The cost of the new hospital did not appear to enter into the consideration of the head department, and when waited upon with some modest design of an inexpensive character in every way suited to meet the pressing requirements of the epidemic, they were most politely handed a carefully drawn up report upon the provision of isolation hospital accommodation for Local Sanitary Authorities, accompanied by several specimen sheets of plans and sections, showing administrative block and wards, drawn to suit the requirements of nearly every district, with the intimation that plans drawn to correspond with these specimens were the only plans the Department would consider or accept. They were, therefore, obliged to return home and with all speed produce another set of drawings before any sanction would be granted to borrow the amount of money required. This delay might lead to very serious consequences where an epidemic was at the time raging, and to avoid any unnecessary delay he would suggest to the members about to erect fever or smallpox hospitals to approach the Local Government Board in the first instance. They were ever ready and willing at all times to give full information respecting the requirements of the Board about the accommodation to be provided for an isolation hospital. The plans he had exhibited practically complied with the requirements of the Local Government Board for a smallpox hospital for a town with a population of about 100,000. The building had not been erected, but a site of 65 acres had been secured about two miles from the Town Hall, upon high ground. Every provision was made for proceeding with the works as soon as the Health Department of the Corporation considered that the time had arrived for the erection of the same. The approximate cost of the buildings as designed was 12,000*l.*, exclusive of land. In the present day it was absolutely necessary that every Authority should be fully alive to the importance of providing fever and smallpox hospitals arranged upon the latest and most modern principles that the Local Government Board require. The work of the Municipal Engineer was ever on the increase, and his education only ended with his life. At times they all had exceedingly anxious and difficult duties to perform—difficult because they required deep thought and perseverance in carrying out the works laid upon them, and anxious because it had not at all times been easy to foresee the result so much to be desired. Yet to his younger brethren he would quote a motto in one word which had often helped him in times of difficulty and doubt—viz., action—leaving for the moment the result in other hands, feeling assured that in engineering the faithful toiler would not fail to receive his just reward when his day's work was ended.

Mr. H. Percy Boulnois, Liverpool, proposed a vote of thanks to Mr. Escott for his address. He had been struck all through the address with the remarkable ability with which it had been prepared, the amount of information it gave them, and its literary merit.

Mr. A. T. Davis, Shrewsbury, seconded the vote of thanks, which was accorded with acclamation.

Mr. Savage, of East Ham, and Mr. Lewis, St. George's, Bristol, were appointed auditors; Messrs. Mann, of Sevenoaks, Hawkins, of Bromley, and Silcock, of King's Lynn, were appointed scrutineers; and the various district secretaries were reappointed until the next meeting in their respective districts.

The meeting then adjourned for luncheon.

Messrs. T. S. McCallum and W. Naylor read a joint paper on the Royton Sewage Works. Mr. McCallum read the first portion of the paper, which stated that the urban sanitary district of Royton contains 2,112 acres of land and a population of about 14,000. The question of purifying the sewage was taken in hand by the late Local Board, who selected a site at a point on the outskirts of the district where the two principal valleys meet, the built portion of Royton being situated along the two valleys and on the ridge between them. A plot of land about 15¾ acres in extent was purchased for sewage purposes for £8,445. The works constructed upon the site include a refuse destructor as well as sewage purification works. The sewage was almost entirely domestic, but probably nearly one-third of the houses had not yet been connected with the town's sewers. The dry weather flow of sewage was at present about 180,000 gallons per day. The sewage was delivered at the works from two main outfall sewers, and was received in a small detritus chamber containing a strainer with cleansing-rakes attached. After passing the strainer the sewage actuated a 6-ft. diameter water-wheel, which supplied power for working one of Keirby's precipitant mixers and distributors. The precipitant used was ferozone, and was supplied by the International Company in the lump form. The ferozone having been added, the sewage passed along a zigzag channel on its way to the settling-tanks. The tanks were six in number, their dimensions being 106½ ft. by 22 ft., and averaging in depth when full about 6½ ft.; their combined capacity was about 560,000 gallons. They were at present worked on the intermittent system, but could be worked on the continuous flow system if necessary. The tanks could deal with over one million gallons of sewage per twenty-four hours. The tank effluent passed from the tanks to a channel formed along the ends of the filter-beds; the latter were eight in number, and had a combined area of 800 square yards. The special medium employed in the filters for

completing the purifying process was polarite, which was protected by a layer of sand as a strainer for arresting any light flocculent matter which might pass over from the settling-tanks. The filters were made up of the following layers :—Sand 10 in. thick, polarite and sand mixed in about equal proportions 12 in., pea gravel 2 in., bean gravel 2 in., walnut gravel 3 in., boulders, with drain tiles between, 6 in. Each filter had a separate outlet valve for controlling the rate of outflow of the filtered effluent, as also for use in connexion with the upward washing arrangement which was provided. The filters when in use worked at the rate of about 1,000 gallons per square yard per 24 hours, but no filter worked for 24 consecutive hours ; experiments had proved that the filters could work at the rate of over 6,000 gallons per square yard per 24 hours. There was sufficient area for the filtered effluent to be further treated upon land (by gravitation), but this had not been found necessary and was not done. The sludge from the settling-tanks was swept by squeegees into a main sludge pipe. This pipe was emptied at the close of each day, and the sludge flowed into a sludge tank under the sludge pressing building. The ground floor of the building contained the destructor furnaces, cremator boiler, and sludge cake store. The water pressed from the sludge was pumped back to the settling-tanks for retreatment. There were four destructor furnaces, and space for two additional ones. The furnaces had sloping rocking bars and were provided with steam jets, but it was not found necessary to use the latter. A flue cremator was provided which could work either with oil or coke. The waste heat from the destructor heated a tubular boiler for generating steam, which was used for driving the air compressor for sludge pressing. The following are the figures of a month's working :—

April 25 to May 23 inclusive :—

Sewage, &c., treated	6,860,000 gals.
Ferozone used	6,610 lbs.
Sludge cake produced	51½ tons.
Lime used for pressing	5,936 lbs.
Ashpit refuse dealt with by three furnaces	319 tons.

WORKING EXPENSES.	£	s.	d.
Sewage purification (labour)	10	15	0
Ferozone	7	7	6
Sludge pressing (labour).....	6	1	9
Lime	2	13	0
Destructor (labour)	13	5	0
General labour.....	4	12	4
	£44	14	7

The destructor and sludge-pressing plant were supplied by Messrs. Goddard, Massey, & Warner. The total cost of the sewage works (including the destructor and machinery, but exclusive of land), was about 12,000*l.*

Mr. Naylor's portion of the paper stated that the trials at the works were made with the help of Mr. McCallum on Friday, May 24, for machinery and refuse destructors, and Tuesday, the 28th, for raw sewage and effluent only. The raw sewage was sampled every quarter of an hour, from 10 a.m. until 2 p.m. The quantity of sewage treated was 42,250 gallons, to which was added 53 lbs. of precipitant (ferozone), or 8·8 grains per gallon. This was allowed to settle until 6 p.m. The filters were then put into operation, and were running from 6 o'clock to 6.50, samples being drawn every ten minutes. At 6.50 the head of water on the filter had fallen 6·5 in., which was equivalent to 880·8 gallons per square yard per twenty-four hours. The results of this treatment showed that the percentage of reduction brought was—total solids, 16·2 per cent. ; albuminoid ammonia, 81·5 per cent. ; oxygen absorbed, 87·8 per cent. The actual amount of sludge produced was not calculated, as it varied according to the quantity of precipitant used and the length of time it had been standing. It contained, however, 49·23 per cent. of water acid, 21·66 per cent. of organic matter, including fixed ammonia. The trial of boilers and destructors extended over 5¼ hours. The amount of refuse burned amounted to 9,996 lbs., or 4·46 tons. The ash and clinker weighed out from this was 4,638 lbs., or 46 per cent. of the input. The water evaporated was equal to ·40 lbs. of water per lb. of refuse. This was evaporated straight from the filter-beds at a temperature of 58 deg. Fahr. This result appeared very low, especially side by side with trials of refuse destructors which had been recently published claiming evaporation of about 2 lbs. of water per lb. of refuse, and it was really this very low result at a preliminary trial which prompted this more careful trial and investigation. The analysis of the refuse as sampled from 103 tins weighed out was—Moisture dried at 212 deg. Fahr., 25·3 per cent. ; volatile matter, 28·2 ; ash, 46·5. A sample of the refuse dried contained combustible carbon 11·2 per cent., combustible hydrogen ·12 per cent. The calorific value of the refuse dried was about one-seventh that of good steam coal ; 1 lb. of refuse produced ·46 lb. ash and clinker. This clinker was allowed to lie, however, in the ashpits until it reached a temperature of only 500 deg. F., and was then wheeled out. The heat given off, therefore, in falling to this temperature would enter the furnaces with the draught. The steam generated was used for sludge pressing. The amount of dry sludge turned out by each press averaged 2,025 lbs. at each pressing. It would be manifestly unfair, owing to leakage, to refer to the indicated horse-power per hour per ton of wet sludge pressed. The indicated horse-power possible had the presses been working continuously was 3·4 horse-power per hour per cell. To do this work the steam consumed per minute was 5·48 lbs., containing 6,295 units of heat ; the difference between the two, viz. 6,004, being lost by radiation or carried away by the exhaust. If the results showed anything at all, they show that the idea of burning town refuse at any sort of profit was erroneous. It could not be imagined that refuse which gave on evaporation anything less than 2 or 3 lbs. of water per lb. of refuse would pay for carting. If any economies were to be effected in the future in the utilisation of towns' refuse, the points to which attention might be profitably concentrated were (1) reduction of loss of heat owing to evaporation of moisture contained in the refuse, and (2) reduction of loss incurred by the heating of excess air.

Mr. Boulnois (Liverpool) said he noticed that the furnaces were provided with steam jets, but it had not been found necessary to use them. He also noticed that there was no less than 46 per cent. of clinker from the refuse, a very large percentage, no doubt owing to the very low combustion. The question was whether the use of the steam-blast would not add to the combustion, and reduce the clinker. The cost of labour, which was put at 10d. the ton, was also rather high. He thought labour should not cost more than 8d. per ton. The thermal value of the refuse at Royal amounted only to 3·4 h.-p. per hour per cell. At Liverpool it amounted to 6 h.-p. per hour per cell. No doubt if the boilers were placed over the cells they would get a greater calorific value out of the refuse consumed.

Mr. Cox (Bradford) said he had visited the Royton works, and considered them exceedingly well arranged. He, however, regarded the working expenses as rather high. He thought it a serious mistake that the steam-jets were not used, as, with a temperature of 356 deg. Fah., he did not believe there was proper combustion. At Bradford they had increased the temperature up to 1,800 deg. or 2,000 deg., and, as a result, had increased the power obtained from 6 up to 16 h.-p., and even now they were not utilising all the heat. The heat as it left the chimney was still 1,200 deg.

Mr. Mawbey (Leicester) said, with regard to the water evaporated and the horse-power per cell, uniformity of data was required. At Leicester he carried out some experiments, and found they evaporated one-fifth of a pound of water per pound of refuse. Their refuse gave a residue of 25 per cent. of clinker. An important point was the character of the refuse to be dealt with, and all sorts of conditions had to be considered in estimating the results in different towns. Speaking of Mr. McCallum's paper, Mr. Mawbey said he had carried out some experiments with polarite filters at Leicester, and obtained excellent results. He found, however, that they must keep out lime, as the carbonate of lime filled up the polarite, and rendered it useless.

Mr. W. Spinks (Leeds) said that Halifax was famous for experiments with destructors—experiments of which they heard very little just now. He and his friend, Mr. Jones, attended a series of meetings at Westminster last autumn, at which one of the speakers assured them most solemnly that he evaporated rather over 5 lbs. of water per lb. of refuse burnt. He worked this out, and found it came to about 11 lbs., deducting the clinker and moisture, which was rather better than the best Welsh coal. Possibly, being in Halifax, they might hear something more about it. He agreed with the other speakers that the amount of clinker was excessively high, but they could not compare the results of a Lancashire town with midden refuse combined with ashes with the dry refuse of a town with a water carriage system of sewage.

Mr. Jones (Ealing) said the results referred to by Mr. Spinks were very surprising, and he could not explain them in any way. It was for those who produced them to explain them.

Mr. J. Patten Barber (Islington) said the amount of clinker proved that the refuse consumed could not be ash-bin refuse, as they understood it in the South. He thought experiments conducted over so short a period as 5¼ hours were apt to be misleading. What they wished to know, was the calorific value of the refuse collected in a town for a period of six or twelve months.

Mr. Silcock (King's Lynn) thought the tank capacity very large for a sewage-flow of 180,000 gallons a day.

Mr. Dearden regarded the burning of house refuse more as a sanitary than a money-making matter. Taking this view, he was of opinion that any temperature less than 1,800 deg. of heat would not render the rubbish innocuous ; and the clinker coming from it would not be safe to burn in any place where buildings would be erected. If the heat was not sufficient to destroy the gases and the germs of disease in the rubbish it was valueless.

Mr. Naylor, in reply, explained that the 356 deg. spoken of in the paper was not, by any means, the highest temperature to which the gases were raised. It was only the temperature after a very large proportion of the heat had been transferred to the boiler. Mr. Boulnois, like everybody else, seemed to think there was a high percentage of ash. But the 46 per cent. included the clinker, the fine ash, and the flue ash all weighed in. There were special causes which tended to make the ash higher than at other places. He agreed with Mr. Mawbey that the indicated horse-power per cell depended upon conditions which varied in every town.

Mr. McCallum explained, in reply to Mr. Silcock, that large quantities of storm-water had to be dealt with.

Owing to want of space, we are compelled to hold over the remainder of this report until next week.

SOCIETY OF ENGINEERS.

ON Wednesday a visit was paid by the Society of Engineers to the Outer Harbour Extension Works, the Existing Harbour, and the Electricity Supply Company's Station, at Dover.

The outer harbour now under construction at Dover has been designed for commercial purposes, and not as a harbour of refuge. The powers for the construction of the harbour were obtained by the Dover Harbour Board in 1891. The works contemplated under the Act consist of :—

(*a.*) An extension of the Admiralty Pier, 580 ft. in length, running approximately in an easterly direction.

(*b.*) An eastern arm starting near the Clock Tower ; total length, 2,760 ft.

(*c.*) The reclamation of about five acres of the sea-bed, between the shore end of the Admiralty Pier and the entrance to the existing inner harbour, with two large steamer jetties projecting therefrom.

The work now under construction, as a first instalment of the complete design, is the East Pier (*b*), the contract for which is being carried out by Sir John Jackson, Messrs. Coode, Son, & Matthews being the engineers. The first 1,260 ft. of this work will be an iron viaduct in bays of 40 ft., except at three points in its length, where stiffening bays of 20 ft. span, and of greater width, will be added to give lateral rigidity to the work. The main part of the viaduct will have an uniform width of 30 ft., including a footpath 6 ft. wide on each side. The deck is at a level of 19 ft. above high water of spring tides. In consequence of great irregularity in the quality of the chalk bottom, the centre pile of each bay is fixed on a cast-iron cylinder, filled with concrete, after being sunk well into the solid chalk ; the outer piles have cast-steel screws 4 ft. in diameter. The superstructure is formed of three rows of lattice girders, properly braced, carrying corrugated decking, on which the road and footpaths will be formed. The gutters, curbs, and nosings are of cast-iron. The direction of the viaduct is approximately south-east. Its outer end will abut on the solid portion of the pier, this latter being 1,500 ft. long. For about 400 ft. from its commencement, the solid work will follow the same south-easterly direction as the viaduct, but thereafter it will gradually curve to the south and south-west. The entrance between the head of the East Pier and the end of the Admiralty Pier extension will be 450 ft. in width, its aspect being slightly to the north of east. The blocks

in this solid work will range from 12 to 20 tons in weight. Above low water they will be faced with granite, and will in all cases be founded on the chalk, into which they will be sunk a depth of about 3ft. The top width of the pier will be 35ft., and the coping level 10 ft. above high water spring tides, the difference between the level of this portion of the work and that of the viaduct being met by an incline with an easy gradient. On the seaward side there will be a parapet 10 ft. wide, somewhat similar to that on the Admiralty Pier. The pier will be finished by a circular head, 55 ft. in diameter, on which it is proposed to construct a lighthouse. The extension of the Admiralty Pier will be of a similar character of construction to the outer portion of the existing work, but it is proposed to use concrete blocks of greater weight than those in the present structure. As soon as sufficient shelter is obtained from works (*a*) and (*b*), it is proposed to commence the reclamation (*c*) and the two steamer jetties, each 400 ft. long and 100 ft. in width. These jetties will be furnished with landing-stages, and will practically form covered stations into which the trains of the L. C. & D. and the S.E. Railways will run. The bed of the harbour will be dredged so as to give a minimum depth of 15 ft. at low water of ordinary spring tides alongside the jetties and in their vicinity. The sheltered area of the new harbour, when completed, will be fifty-six acres.

The Admiralty Pier affords protection to the western side of the new works. There are two basins—one known as the Wellington basin, of about 3½ acres, with gates of 70 ft. opening, and the other, the Granville basin of 4¾ acres, with gates of 65 ft. opening. The present outer harbour of 13¼ acres will become an inner tidal harbour at the completion of the extension works. A new lighthouse with a masonry tower surmounted by a lantern of the fourth order is being erected at the turret end of the Admiralty Pier, and the slipway at the upper end of the Wellington basin is capable of hauling up a safe load of 800 tons. The river Dour, from which Dover takes its name, discharges into the harbour upon the upper or north side of the Wellington dock. Mr. A. T. Walmisley, M.Inst.C.E., as Engineer to the Dover Harbour Board, has charge of the Admiralty Pier and Inner Harbour.

The entrance to the Dover Electricity Supply Company's station is by a private road leading from Park-street. The building consists of offices, occupying the west portion, and adjoining these are the engine and boiler rooms. The engine-room, which is faced with glazed bricks throughout, is 100 ft. in length by 30 ft. in width; the boiler-room is 100 ft. long by 45 ft. wide. The floor of the engine-room is about 5 ft. above the level of the road. Machinery can thus be readily lifted from waggons by means of a 15-ton crane which traverses the engine-room. The boiler-room is on the road level. The flue extends along one side of the boiler-room, passes under the front of the buildings, and terminates in a circular chimney-shaft, 120 ft. in height. The supply leaves the station at a pressure of 2,000 volts, by Silvertown concentric cables, to some eighteen transformer street boxes in various parts of the town, where the current is converted to a pressure of 100 volts and distributed by means of Prescot paper-insulated mains to consumers' premises. There are at present twenty-one public arc lamps in the streets, each of 2,000 N.C.P., and ten further lamps have been contracted for, to be suspended from arches. The contract for the whole of the machinery has been, and is being, carried out by the Brush Electrical Engineering Company, Limited. The engineer and manager is Mr. A. J. Lawson; and the resident engineer is Mr. A. A. Whitlock.

COMPETITIONS.

BOARD SCHOOL, LANCASTER.—We understand that the Lancaster School Board have placed first the plan sent in by Mr. Robert Walker, architect, of Windermere, under motto, "Up to Date," for a large board school for 1,000 children, to be built in the Marsh, and have instructed him to proceed with the work.

NEW CHAPEL AND SUNDAY SCHOOL, NOTTINGHAM.—In a recent limited competition for New Chapel and Sunday School, for the United Methodist Free Church, Gregory Boulevard, Nottingham, the design of Mr. Fredk. W. Dixon, architect, of Manchester and Oldham, has been selected. There were nine competitors. The chosen design of late Gothic style is to be executed in dark red pressed bricks, with dressings of moulded brick and terra-cotta. The large traceried windows will also be in red terra-cotta.

Illustrations.

FURNESS ABBEY.*

THE Abbey of Furness was originally established in 1124 through the munificence of Stephen, Count of Boulogne, afterwards King of England, at Tulket, near Preston, in Amounderness, and colonised from Savigny. In 1127 the founder added to his first endowment the forest of Furness and other lands adjoining, whereupon the monks removed from Tulket and took up their abode at Furness.

Here grew up the great Abbey whose ruins still exist; an Abbey which quickly grew so rich that, at the time of its suppression, in 1537, when it was surrendered by the abbot, the prior, and twenty-eight other monks, its clear annual value was estimated at over 800*l.*, a sum equivalent to at least 16,000*l.* a year at the present day.

Of the history of the Abbey from its establishment at Furness in 1127 to its destruction in 1537 there is practically nothing that throws light upon the architecture or arrangements. For the elucidation of these we must turn to the remains themselves.

Although Savigny did not become affiliated to Citeaux until 1148, the disposition of the buildings at Furness is entirely Cistercian. The monks at their first establishment must, therefore, have been content with temporary quarters only, and by the time they were ready to replace these by structures of a more permanent character, they had become Cistercians, and so adopted the plan and arrangements peculiar to the order throughout Europe.

The site of the Abbey somewhat resembles that of Fountains in being a contracted valley, but here this so runs that the buildings which, at Fountains, are placed east and west of the church and cloister, extend at Furness to the north and south.

Although originally but little inferior in extent to Fountains, the existing remains at Furness are unfortunately fewer, there being not much else now above ground than the central parts and west end of the church, the eastern range of buildings, and some outlying fragments of the infirmary and abbot's lodging.

On turning into the Abbey grounds from the railway station, the first building that meets the eye is the shell of a charming little chapel of the early part of the Geometrical period. It still retains its altar platform, sedilia, and drain. This building is usually misnamed the "abbot's chapel," but it is really the *capella extra portas* usual in all Cistercian abbeys, as may be seen at Croxden, Fountains, Rievaulx, &c. Beside it is a wide arch of entrance into the Abbey precinct. A few yards further south, close beside the Abbey Hotel, the road passes between the excavated remains of the Abbey gatehouse, which was evidently a building of considerable architectural importance. The Abbey Hotel stands on the site of, and probably incorporates, though much altered, one of the guest-houses. The gatehouse opened into the outer or base court of the Abbey, which contained the stables, bakehouse, brewhouse, and other menial buildings, as well as the lodgings for guests, and probably an infirmary for their use. All these have disappeared, but traces of some important buildings may be noticed under the shrubs in the hotel gardens on the east side. A little further on are the ruins of a small gatehouse of the fifteenth century. This stood in a wall which extended from some destroyed buildings to the north porch of the church, and opened into the monks' cemetery, or perhaps into an outer part of it where lay folk were privileged to be buried.

We now come to the Abbey church. It originally consisted of a short aisleless presbytery, a central tower, north and south transepts, each of three bays with eastern chapels, and a nave and aisles of eleven bays.

The original presbytery was almost entirely rebuilt at the beginning of the fifteenth century, and its western part alone remains, though much altered. It retains traces of a large arch on each side that opened into the chapel beyond. The north arch is now blocked, and the south reduced to a doorway. The great arch into the crossing remained intact until a few years ago, when it fell. The stones, which were but little injured, have been carefully replaced under the direction of Sir James Ramsden. The arch is pointed, with somewhat curious Transitional mouldings, and rests on twin shafts, which are stopped off some little way from the floor on corbels of unusual pattern. The shafts themselves are also set back into the wall so as to be as unobtrusive as possible. The other arches of the crossing have fallen. Those to the north and south rested on shafts starting from the floor. Each transept opened into the chapels east of it by an arcade of three pointed arches resting on clustered columns with square capitals. The triforium stage contains three round-headed openings, of which the middle one on the north side is fortunately perfect. It is of two orders, the inner of which is sub-divided, and has two trefoiled arches carried by a circular column with square capital; the side-shafts are similar. The tympanum is solid and plain, save for a circular sinking between the heads of the arches. The clearstory windows have all been walled up. They seem to have been plain round-headed openings. The chapels east of the transepts have been almost entirely destroyed. Those on the north side retain the platforms and bases of their altars, and traces of the perpent walls that divided them. The west side of each transept has in the lower stage a pointed arch opening into the nave aisle, and two plain round-headed windows, which were subsequently filled with Perpendicular tracery. In the upper stage were formerly three clearstory windows like those opposite, but these were blocked in the fifteenth century, and replaced by two large three-light windows. At the same time large windows with similar tracery were inserted in the transept gables. In the north gable there is below the window a large and elaborate round-headed doorway of three orders with detached jamb shafts. A doorway in this position, the side of the church remote from the cloister, is usual in Cistercian abbeys, but it is seldom of any architectural importance. At Furness, the contracted site probably prevented any prominence being given to the west front, where, indeed, the later tower has no western or other entrance; the door into the transept must therefore have been the principal entrance into the church, which explains its enriched character. It was in later times covered by a porch, with a descending flight of steps from the higher ground on this side. The window in the south gable of the transept is shorter than its fellow opposite, on account of the abutment of the dorter roof below it. The wall below is quite plain, but has on its west side, some feet from the ground, the usuai doorway by which the monks came into church at midnight to say their *vigiliæ* (*i.e.*, matins and lauds). The flight of steps up to the door has been removed. At about the level of the door-sill, in the transept wall, are two brackets which evidently supported a wooden gallery. This must have been reached from the dorter stair, but its purpose is not apparent. It may, however, have held the clock, which usually stood in this part of the church.

The original presbytery was probably vaulted, as were the transept chapels, but the transepts themselves had wooden ceilings only.

Of the nave little else is left than the stumps of the piers and the greater part of the outer wall of the south aisle. Architecturally, it probably resembled the east side of the transepts, but the piers were alternately round and clustered. The aisles were vaulted. In the south, which is the earlier, as usual, to enable the cloister to be built against it, the vaulting shafts are plain three-quarter cylinders; but in the north aisle the shaft was compounded of a large central and two-side members, all cylindrical.

The whole of the original work of the church is of the Transitional period, with a combination of pointed arches and round-headed doorways and windows, and though many of the columns are clustered, the capitals have always the square abacus, with slight leafwork underneath. The earliest portions, that is, the central parts, cannot be much earlier, if at all, than 1160, which accounts for the Cistercian characteristics so plainly stamped upon the building. The main part of the nave was probably of somewhat later date, but a continuation of the same work.

Early in the fifteenth century the eastern half of the old presbytery, perhaps on account of insufficiency of light, as well as its restricted area, was taken down and replaced by a much lighter work which extended also a bay further east. At the same time the chapel adjoining it on the south was prolonged nearly as far eastwards to form a vestry. The new presbytery had on the east a large window of many lights and as wide as could be, but only the jambs remain. On the north

* The series of the "Abbeys of Great Britain" is continued this month with illustrations of "Furness." The next of the series (Romsey) will appear in the number to be published October 5. Particulars of this and of the three Cathedral series ("England and Wales," "Scotland," and "Ireland") will be found on p. 20; also (on page i.) of the recent re-issue, in book form, of the series of English and Welsh Cathedrals.

Furness Abbey: Sketch from North Transept, showing side light of Chancel.

were two tall windows, each probably of four lights with a transom. The tracery has long fallen out, but the pointed openings remain, with ogee hood-moulds ending in large carved finials. On the south were two other windows, but owing to the abutment below them of the vestry roof these are barely half the length of those opposite. The wall below them, on the presbytery side, contains four canopied sedilia, together with a drain and towel recesses of similar work, the whole forming one fine composition of uncommon richness and beauty. The sedilia are all on one level, and have pierced traceried loops between them. The bason of the drain, probably because it was of marble, has been torn out. Above it is a niche for the cruets. The towel recesses are tall narrow niches, which still retain the stumps of the iron hooks or pegs on which the towels once hung. The new presbytery was not vaulted, but had a wooden ceiling resting on corbels. In the presbytery are now collected various monumental and other remains from various parts of the church.

The vestry was amply lighted by a large window on the east and two on the south, and, as usual, contained an altar. The drain for this exists. The corbels for the roof remain in the

presbytery wall. On the north side stood the presses and cupboards for the vestments and ornaments, and it is not improbable that, as in the parallel case at Fountains, the arch from the transept was walled up to afford more press-room. This is borne out by the fact that the vestry is cut off from the next chapel by a solid wall of the same date as the east end.

During the fifteenth century the monks had grave doubts as to the stability of their central tower, and desperate efforts were made to give it additional support. The south-west pier seems to have been the weakest. This was accordingly strengthened by filling up solid the nave arch next to it, and reducing the aisle arch to a doorway. A strong buttress was also built on its east face. The arches at the west end of the presbytery were blocked in the manner previously described and some of the triforium openings closed up. Whether the spreading of the walls was produced by similar causes to those which have necessitated the unsightly rods and straps that have lately been fixed in the north transept, it is now impossible to say, but not improbably the draining of the swampy valley and the utilisation of the stream may have had some effect. Whatever was the cause, the efforts made to counteract it seem, as at Fountains, to have been ineffectual; and, like their brethren in the valley of the Skell, the monks of Furness began to build a new tower at the west end of the nave. Owing to the contracted site and the necessity for leaving passage-room on the west, the foundations of the new tower were laid partly within the last bay of the nave, which was accordingly taken down. How far the new tower was carried up it is difficult to say. The existing part is, on the nave side, a little higher than the springing of the arch, and the north and south walls are about as high. As already explained, there is no west door, but the boldly-moulded plinth is carried right round the tower. From the niches in the buttresses and the ornamental mouldings of the west window, which was of four lights with a transom, the tower was evidently intended to be an important addition to the church. The piers of the arch into the nave have great stilted bases, and are as ugly and coarse as the great arch of the Late Perpendicular tower at Fountains, with which, indeed, the Furness tower is contemporary.

Of the original arrangements of the church not much need be said. The corbelling off of the shafts that carry the eastern arch of the crossing suggests that the monks' stalls came as far eastward, and they extended westwards under the crossing, and probably into the first bay of the nave. In this case the arches at the west end of the presbytery formed the upper entrances into the choir. After the rebuilding of the presbytery the high altar was moved a bay eastward, where its base still remains. It stood against a reredos or wall crossing the middle of the bay, so as to leave room to pass behind it. After the walling up of the arches at the west end of the presbytery room was probably made for the upper entrances by moving the stalls a bay westwards. Their limit in this direction is fixed by the remains of the west wall of the *pulpitum*, which doubtless occupied a bay, between the third pair of piers. That the stalls still remained partly under the crossing seems to be proved by the remains of a staircase in the south-west angle of the north transept. This may have led to an organ-gallery above the stalls, like that in the same position in St. Saviour's, Southwark. The first two bays of the north aisle formed a chapel, and here were found the fine effigies of a cross-legged knight and a lady now preserved under cover in another part of the Abbey. On the south side is the base of, apparently, a pew or gallery behind the stalls, richly ornamented with beautiful traceried roundels of the fifteenth century. This chapel was reached from the passage under the *pulpitum*. The face of the latter was probably carried right across both aisles. It certainly was on the north, for here remains the platform of an altar that stood against it, with a floor-drain on the edge of the step. The western part of the nave originally formed the choir of the *conversi* or working brothers, and was shut off from the aisles by continuous walls flush with the inner face of the piers. These were, however, subsequently removed. The only other noticeable feature in the nave is a broad flight of steps at the west end of the north aisle. This was built after the shortening of the aisle and carrying up of the new tower, but the object of it is a puzzle. It may have led to an organ gallery at the west end of the nave.

The total interior length of the church is 273 ft., and of the transept 130 ft.; the presbytery is 27½ ft. wide, and the total width of the nave and its aisles is 65½ ft.

The monastic buildings stood south of the church, being grouped, as usual, round the cloister. Of the cloister itself nothing whatever remains except the foundation of the garth wall. Owing to the cramped site the cloister was oblong instead of square, being about 100 ft. from east to west by 130 ft. from north to south. The eastern range is the only one of which there are any remains above ground, excepting a fragment of the western range. It consists practically of two buildings: the chapter house, with its vestibule, &c., and the substructure of the monk's dormitory, or dorter. In most Cistercian abbeys there intervenes between the church and the chapter house a narrow vestry, with a book-closet or library at its western end. At Furness this feature is omitted, and the chapter house immediately adjoins the transept. With the exception of its vault, which fell in the last century, it is quite perfect, and is an extremely fine example of its kind. It is entered from the cloister by a richly-moulded round-headed archway of four orders with slender jamb-shafts. This is the central of an arcade of three, all of the same size and design. The only attempt at carving is the dog-tooth ornament on the hood-mould, the rest of the effect depends entirely upon the mouldings. Each arch was sub-divided, but the innermost order and the dividing shaft have in every case been broken away. The central arch opens into the vestibule of the chapter house, a vaulted passage with a trefoiled arcade on each side standing on a bench-table. The capitals of the arches are of marble. The northern arch opens into a room about 13 ft. square, covered by a low barrel vault. From marks on the walls it was probably the book-closet or library. The southern arch opens into a similar room, but with a pointed and higher vault. It was probably also a book closet, for by the time the chapter house was built the monastic libraries had begun to grow. The chapter house is 60 ft. long by 45 ft. wide, and of four bays, divided into three alleys by two rows of clustered columns, which also supported the vaulting. Round the walls the vaulting-ribs sprang from triple groups of filletted shafts rising from moulded corbels, but on the east side the shafts are replaced by foliated corbels. Between the vaulting shafts there is in each bay an arcade of two pointed arches, with an ornamental roundel in the head. In one compartment on the north, three on the east and two on the south, these arches are pierced by lancet windows, which appear externally as coupled lights with jamb shafts. The buttresses between the windows are thin and of no great projection, with the angles widely chamfered. All the details of the chapter house are of great beauty and worthy of the closest study. Despite the round-headed arches on the cloister side the work is fully developed Early English of a date *circa* 1240.

Next to the three arches in front of the chapter house are two smaller ones of the same character and date. These open into the ruin of a great vaulted undercroft, 30 ft. 6 in. wide, which extended southwards from the chapter house for a length of over 200 ft. The western side is still fairly perfect, as is the northern end of the eastern side, but the rest is reduced to only a few feet in height, and the vaulting is all gone, as well as the central row of pillars that carried it. The northernmost bay was cut off by a wall, and had its own entrance from the cloister; it served as the *auditorium* or parlour, where conversation was permitted. The next bay, which has a door from the cloister as well as in its east wall, was also shut off, probably as a passage to the cemetery and to the sacrist's checker, which is known to have stood outside. Part of the gallery leading to this is shown in Beck's plan of the Abbey, but has since been removed. The remaining twelve bays apparently formed part of the novices' department, but were also used as a means of communication between various offices. In the fifth bay from the chapter house a door opened eastwards into a pentise alongside the ground story of the monks' rere-dorter, and six bays further on another door opened into a similar pentise placed against a much ruined building that probably formed part of the abbot's lodging. The two last bays appear to have open arches on the three free sides, but for what reason is not evident. That it did not long exist is shown by the fact that the openings were soon closed up or reduced to doorways, and one of those on the east is filled by a late thirteenth-century fireplace. On the west side the five bays next the doorways are blank, owing to buildings on the outside. Then come five pointed windows, and beyond them the two end openings. The whole range has very little architectural detail, but it is probably part of the same work as the chapter house.

Over the whole of the chapter house and the sub-vault just described was the great dormitory or dorter of the monks and (probably) novices. It was reached by a flight of steps on the west side opening from the corner of the cloister, and had another stair at its north end leading down to the church. The door of this, in the transept wall, is at the end of a broad passage or bridge extending over the vestibule and book-closets. From this bridge there were probably steps up to the room over the chapter house, which was on a higher level. Both divisions of the dorter were lighted by plain pointed windows, of which thirteen remain on the west side, and about as many on the opposite side.

Near the middle of the dorter a door in its east wall opened on to a bridge leading to the rere-dorter, which stood parallel with the range; the basement of it remains.

Of the other buildings round the cloister only the foundations remain. On the south was the frater, with the *calefactorium*, or warming-house, on the east, and the kitchen on the west. These were, however, subsequently pulled down and rebuilt on a somewhat different plan; the frater being moved further west, and the kitchen placed at its southern end with the screens between. Not improbably, as was the case at Kirkstall, the new frater was of two stories, the lower floor being used as the misericorde, or hall where meat might be eaten, while the upper was the frater proper, where vegetable diet only was to be had. A flight of steps on the west apparently gave access to this upper floor.

The great western range or *cellarium* extended southward from the church for 225 ft., and was sixteen bays long. Only its foundations remain. The three northernmost pair of bays were walled off to serve as the outer parlour, a cellar, and the buttery respectively; while the seventh bay formed the entry to the cloister from without. The remaining bays formed originally, as at Fountains and Kirkstall, the frater of the *conversi*, but in later times were used for other purposes. At the southern end is the rere-dorter.

In the middle of the length of the *cellarium*, on its western side, are the remains of a porch and ascending stair to the upper story. From the porch a pentise originally furnished a covered way to a door opening into the church, but during the building of the new tower this door was destroyed and the pentice apparently removed. Running westwards from the porch is a late Perpendicular building, about 50 ft. long and 23 ft. wide, probably an extension of the cellarer's department.

There still remain two outlying buildings to be described. The first of these is commonly known as the "hospital," and stands close under the cliff on the extreme east. It consists of a little Early English hall, of five bays, with central row of columns to carry its vault, and was evidently a building of considerable architectural importance. In the middle of the east wall was a handsome fireplace, and it had an upper story. Although the connecting portions have not yet been traced, there can be little doubt that this hall and its adjuncts formed part of the group of buildings adjoining the south-east corner of the dorter, and that the whole formed the abbot's *camera* or lodging. Here lived not only the abbot of the house, but the father-abbot when he came to hold a visitation, which he could do whenever he liked, and the accommodation would therefore be none too large. It is hoped that excavations will shortly be made to make these points more clear.

The last building to be mentioned stood east and west to the south of the claustral buildings, and consisted of a great hall, nearly 130 ft. long and 48 ft. wide, with a parlour and solar at the south end, and a chapel and buttery, with rooms over, at the north end, beyond which was a detached octagonal kitchen. It communicated with the cloister by a passage extending from the south-west corner of the dorter range to the door of the screens, and had another passage curving round to the north from the buttery door, perhaps to the abbot's lodging, but this has to be traced. The hall, including the screens, was five bays long. It was lighted by a range of large windows on each side, but the hall is so ruined that only a jamb of one window is left, at the east end of the north wall. The slight projection of the buttresses shows that the roof can hardly have been of one span, and there was probably a central row of columns, now entirely removed.

The parlour at the west end had one, if not two, fireplaces, and must have been a comfortable room. A vice in the south-west corner of the hall led from the dais to the solar over the parlour.

Of the block at the east end of the hall the greater part remains, and the extreme refinement of the details only make us regret that no more is left. The west side shows the end wall of the hall. In the lower stage is an arcade of five large pointed arches, supported by triple shafts, with a lesser arch at each end. The two northernmost and the fifth of the large arches are pierced with doorways, the former opening into the buttery, the latter into the chapel. The other arches stand upon a bench-table. The upper stage has an arcade of six tall pointed arches, supported by clustered columns resting on a moulded string course. The wall above is broken down. There are some marks of a gallery over the screens.

The chapel is 43 ft. long and 25 ft. wide, and of three bays, with a beautiful simple vault, which is, fortunately, intact. The east window was a wide one of five lights, with a depressed segmental head, but has lost all its tracery. On the south side are three windows, also with segmental heads, but the curves are so slight that the sides of the arch are almost straight. Each window was of two lights, with curious tracery in the head, most of which has fallen out. There was a like window on the north side. In this chapel are collected various monumental effigies and architectural remains. Among the former are the knight and lady removed from the north aisle, figured in Beck's work, as well as the two strange-looking military figures, also illustrated by Beck. Here is also a unique effigy of a Cistercian deacon.

The buttery or serving-room was lighted by a window of two lights with a transom in its east wall, beside which is a door to the kitchen. This door was covered by a pentise. The south side is a blank wall against which to set the presses and cupboards containing the cups, linen, and other furniture, and on the west are the two serving-doors into the screens. On the north side are two doors, a small one opening into a vice to the upper floor, and a large one which opened into the covered passage or gallery outside that curves round to the north. This gallery was of two stories, the upper being of wood, and entered from a lobby over the buttery, but until its connexions are made out it is useless to speculate as to its purpose. The upper floor that extends over the chapel and buttery was reached in a somewhat curious way. In the north-east corner of the buttery is a circular vice or stair. This leads to a narrow lobby or vestibule running east and west, which has a door northwards into the gallery above-mentioned and ascending steps opposite to the upper floor, which is 7 ft. above. It was not, however, necessary always to come down into the buttery from this upper story, for a second passage opened southwards from the vice in the thickness of the wall between the upper and lower gallery doors, and descended by a skew stair into the passage connecting the hall with the claustral buildings. The walls of the upper floor remain on two sides only. On the north, or lobby side, are two trefoiled lights, one on each side of the gallery door, and on the west is a recessed garderobe with a shaft descending in the thickness of the chapel wall to an arm of the great drain which passes under the hall and chapel. The other sides, in one of which was doubtless a fireplace, are broken down. The octagonal kitchen was 40 ft. in diameter, and seems to have been taken down before the suppression, since a mediæval wall runs directly over its foundations. The whole of this block of buildings is one of date probably *circa* 1300. It is usually assumed to be the abbot's house, but there can be little, if any, doubt that it is really the *infirmitorium*, or monks' infirmary of the abbey. The great hall and its adjuncts furnished ample accommodation for the infirm brethren, and those who were temporarily "in farmery," while the room (or rooms) over the chapel and buttery not improbably served as a sick man's chamber. Possibly the infirmarer also had a room here. W. H. ST. JOHN HOPE.

*** WE have to thank Mr. F. Wilkinson for enabling us to add to our general view and plan of Furness the sketch from the north transept, engraved on page 11.

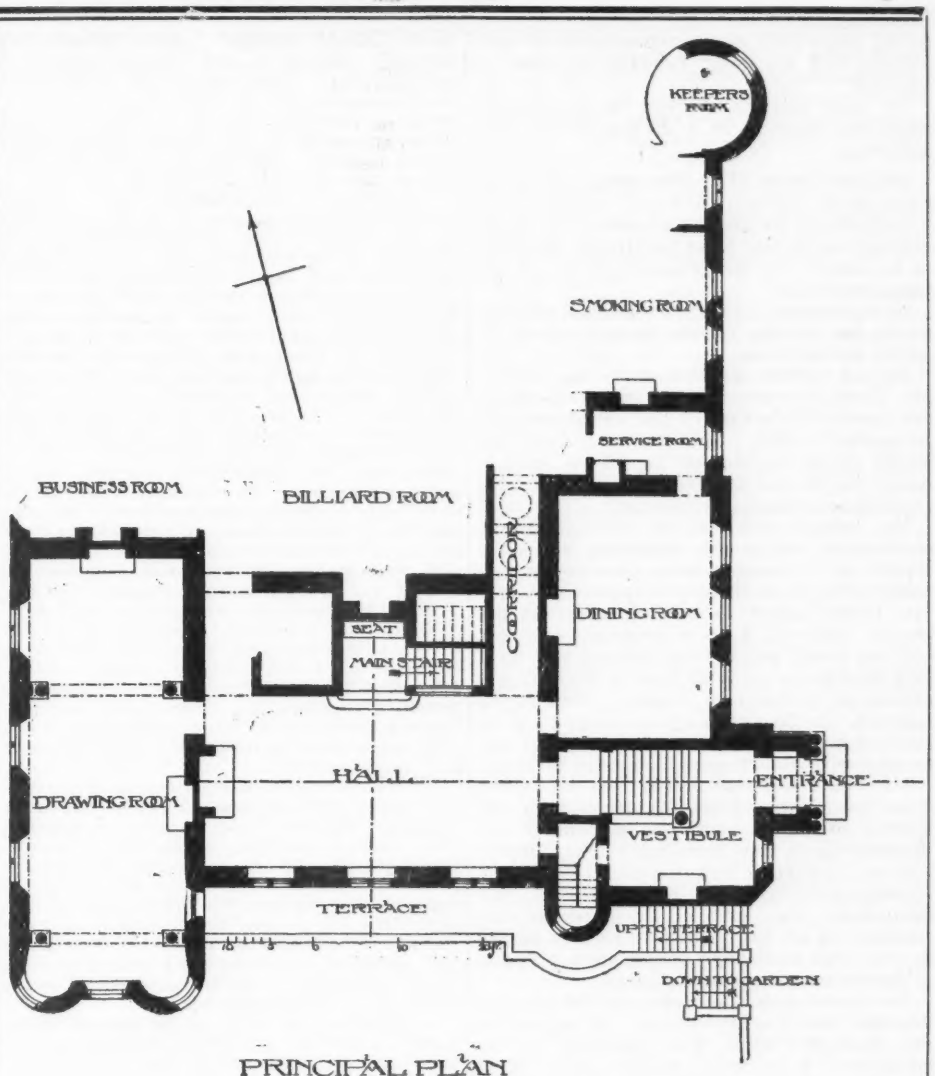
"KINCARDINE," DEESIDE, N.B.

THIS house is in a commanding position, 600 ft. above the sea level, on a site admitted to be one of the most beautiful in the valley. The house is built of granite, with rock-faced red Corrennie dressings and rough-cast walls; the roofs are covered with green Westmoreland slates.

The work will probably be completed within the present year. The house stands on a high site in a landscape of exceptionally fine and picturesque character.

The plan of the principal rooms on the main ground floor is given; the kitchens and offices are on the lower ground floor, which is cut off at the back by the rise of the ground. The architects' client objected, we understand, as is sometimes (not unnaturally) the case, to the publication of any further details as to the plan and arrangement of the interior. The plan, however, explains the portion of the house prominently shown in the view.

The architects are Messrs. Niven & Wigglesworth, of London. The contractors are all of Aberdeen; for mason-work, Mr. John Morgan; carpenters, Messrs. James Garvie & Sons; slaters, Messrs. M'Gregor & Shand; plasterers, Messrs. Scott & Sellar; painters, Messrs. Gordon & Watt; plumber, Mr. Peter Stewart; and water supply works, Mr. A. B. Robertson.



PRINCIPAL PLAN

"Kincardine," Deeside.—Plan.

PORTRAIT STATUES: "LA ROCHEJACQUELEIN" AND "MEISSONIER."

THOUGH we do not regard portrait figures in ordinary costume as the class of subject most suitable for treatment in sculpture, yet the two which we illustrate this week, by two of the most eminent sculptors of the day, are so full of character and originality, and so admirably modelled and posed, that one is inclined for the moment to forget the unsuitability of boots and other details of modern dress to sculptural treatment.

In the figure of Meissonier, which we presume represents the great painter in a costume which was habitual to him when at his work, M. Frémiet had every disadvantage in regard to sculpturesque line to contend against; the short coat, tight breeches, and high boots seem hopeless for the sculptor; but he has unquestionably produced a portrait of strikingly marked character and individuality.

In the figure of La Rochejacquelein M. Falguière has had the advantage of the long coat of the Revolution period and the sash at the waist, which form together a costume much more suited for treatment in sculpture. The attitude and expression are fine and heroic, and quite in keeping with the history of the person portrayed. Henri de la Rochejacquelein,* it may be remembered, was a Royalist chief who commanded the army of the inhabitants of La Vendée against the Republican troops, after the fall of Louis XVI.

The Meissonier statue occupied the post of honour, facing the main entrance, in the Paris Salon of 1894, and M. Falguière's work occupied the same position at the Salon of the present year.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday, at the County Hall, Spring Gardens, Sir Arthur Arnold, Chairman, presiding.

Working-class Dwellings.—The Public Health and Housing Committee recommended the Council to pass a resolution, under Section 39 (1) (b) of the Housing of the Working Classes Act, 1890, in respect of the Falcon-court enlarged area (including Brent's-court, Adam's-place, Redcross-place, and Maypole-alley), in the parish of St. George-the-Martyr, Southwark. It was stated that the gross cost of acquiring the property was 35,000*l.*, and the estimated recoupment 20,000*l.*, leaving the net cost 15,000*l.* The Committee further recommended that, having regard to the fact that no re-housing was practicable on the area when cleared (in consequence of its situation and the operation of the new Building Act), negotiations should be entered into for the purchase, under Part III. of the Act, of sufficient land in the neighbourhood of the area for housing at least one-half of the people displaced.

The first recommendation was adopted.

Mr. Beachcroft moved as an amendment (and in substitution of the second recommendation) the addition of the following words: "On the understanding that it is the intention of the Council forthwith to apply to Parliament for powers to lease land, acquired under Part III. of the Act referred to, for the erection of artisans's dwellings, so that the Council may, should it see fit to

* There seems some uncertainty in the spelling of the name; it is often written as one word, "Larochejacquelein"; and the Salon catalogue gives it "Rochejaquelein," without the c. The other spelling is more consistent with modern French orthography,

do so, divest itself of the responsibility of itself building and managing buildings on land so acquired."

Sir John Lubbock seconded the amendment, which was adopted on a division by 46 votes against 45.

Millbank Prison Site.—The paragraph in the report of the Public Health and Housing Committee relating to the employment of an outside architect to prepare plans for artisans' dwellings to be erected on the Millbank Prison site was again considered.*

An amendment had been proposed and seconded at the last meeting to refer the matter back for further consideration.

Colonel Rotton said that at the last meeting Mr. Burns, in advocating the proposed course, had stated that the Council had already engaged an outside architect to prepare the plans for the Bexley Heath Asylum, but he did not seem to realise that the planning of an asylum undoubtedly required the services of a specialist.

Mr. Roberts said that Mr. Blashill was an architect of considerable eminence, and quite capable of preparing suitable plans for the proposed buildings, but in his (the speaker's) opinion Mr. Blashiil ought to be their adviser in this matter. After all, it was a question of economy, and they would get a better economical result if they employed a specialist than if the work was carried out by their own architect. He thought, however, that the work ought to be given to an architect selected in open competition, and not, as was proposed, to a specially-selected architect.

Mr. Bruce said that in 1893 the matter was made the subject of an instruction from the Council to the committee on account of the pressure which then prevailed in the Superintending Architect's department. The present recommendation was the direct result of that instruction. The duties of the Superintending Architect in the vast district with which he had to deal were exceedingly onerous, and a system of devolution was urgently required.

Mr. Marks desired to point out the practical financial bearing of the question. If the staff of the Architect's office were increased by the addition of a Designing Architect, at 700*l.* or 1,000*l.* a-year, it would be obviously cheaper than paying an outside architect a commission of 10,000*l.* or 12,000*l.* on one job. The effect of the present proposal would be to supersede a very competent official, and if the precedent were adopted it might result in superseding others.

Colonel Ford regarded the recommendation as an attack upon Mr. Blashill, who had told the Committee he was quite prepared to undertake the work.

On a show of hands the amendment was carried by a considerable majority.

Light Railways.—The same Committee recommended—

"That a communication be made to Her Majesty's Government expressing the hope that if the Light Railways Bill is proceeded with and referred to a Select Committee there may be added to that Committee's reference a special instruction to make full inquiry into the questions above referred to, and that the Home Secretary and Mr. Bryce be asked to receive a deputation on the subject."

Alderman Beachcroft moved, as an amendment,

"That, as the Light Railways Bill has been dropped, the Government be urged to appoint a Select Committee to inquire into the subject of tramways and light railways, as to the best mode of securing their extension, both in agricultural and urban districts, especially in relation to the needs of the Metropolis and its suburbs."

The amendment was agreed to.

Asylum Accommodation.—The Asylums Committee recommended that the Council do authorise the expenditure of 40,000*l.* for the erection and equipment of temporary buildings at Colney Hatch and Banstead Asylums, to accommodate 300 female and 300 male patients respectively.

This was agreed to, and the Council subsequently adjourned.

* See last week's *Builder*, p. 487.

Correspondence.

To the Editor of THE BUILDER.

THE ARCHITECTURAL MUSEUM.

SIR,—I have read with much interest your report of the Annual Meeting of the Royal Architectural Museum and Westminster School of Art in the *Builder* of June 22, and note with pleasure that efforts are being made to provide more adequate accommodation, not only for the students, but also for the valuable collection which at present is so miserably "cabin'd, cribb'd, confin'd, bound in" at Tufton-street. According to Sir A. W. Blomfield the Museum receives but slight support from members of the profession. Is not the Council, to some extent, responsible for this apparent lack of interest in their Museum? The collection, consisting principally of casts of Mediæval ornament and detail, a few specimens of wood-carving, and a limited number of Classic examples, would afford material for useful study to many, at least, of the younger members of the profession, and to Architectural Association men, but, if my memory serves me, you are precluded from *sketching* these examples—the only way by which to obtain a sound knowledge of architectural detail—unless you happen to be a student of the Westminster School of Art, or have subscribed that golden coin with which the average student, architectural or otherwise, is not overburdened. Again, and this greatly surprised and disappointed me when first visiting 18, Tufton-street—there is nothing to represent the *practical* side of architecture. Is it unreasonable to expect that an architectural museum will contain specimens, if only of the more costly materials employed in the construction or embellishment of some of our finest buildings? It would certainly be most undesirable—did space permit of it—to convert a museum like that at Tufton-street into a permanent Building Trades' Exhibition; but surely many of the natural products used in building operations might with advantage be represented—such as, for instance, a collection of British building-stones, carefully labelled, with a concise description of their respective geological positions, chief characteristics, uses, &c., each example having not only a tooled but also a fractured surface, that the physical structure may be more readily observed.

We are reminded in another column of the issue of the *Builder* already alluded to, of the unpleasant colour of "fresh cut" Pentelic marble. A collection of the more rare and costly marbles used for decorative purposes would not only present an interesting study, but would also afford any local architect the opportunity of obtaining his client's approval of a particular stone he may have specified, thus preventing his patron from unpleasantly reminding him, in days to come, that the marble decorations of his hall are of a "cold, sugary white," or any other equally unsatisfactory hue.

By enlarging the scope of the Museum in the manner I have but very imperfectly indicated, the Council would, I believe, have little cause to complain of want of appreciation, or lack of support, on the part of the architectural profession.

FREDERICK JOHN SAWYER.

Brighton, June 24, 1895.

*** We print our correspondent's suggestions, but we are inclined to think that a museum of materials and a museum of architectural art belong to a distinct order of things; and at all events they could not be combined at Tufton-street without a new and enlarged building. The Architectural Museum was originally an outcome of the enthusiasm of the Gothic revival, which is the reason of the immense preponderance of Gothic detail illustrated on its walls. Its contents need revision for the requirements of the present day.—ED.

COVENTRY MUNICIPAL BUILDINGS COMPETITION.

SIR,—In reference to your article in last week's *Builder*, the question of the plans appearing in my name was a matter of arrangement between Messrs. Brewill & Baily, of Nottingham, Mr. C. E. Mallows, and myself, and you will see by the copies of the *two* local papers I send you herewith (dated June 21) that I took the earliest opportunity, after the official notification, of publicly announcing the fact that I had received the co-operation of the above-named gentlemen. H. QUICK.

*** Nevertheless, we think that to see a set of competition drawings exhibited which bear the name of one architect, when they are obviously the work of another whose style of drawing is well known, is evidence of a very bad system.—ED.

RE MESSRS. BAIRD, THOMPSON, & CO., VENTILATING ENGINEERS.

SIR,—It having come to my knowledge that the above company have recently issued a large number of prospectuses bearing my name as one of the directors, I beg to state that I am not a director, and that I have no connexion whatever with the company, and that the use of my name on their prospectus is entirely unauthorised.

WALTER ROWLEY, M.Inst.C.E.

Leeds, July 2, 1895.

STAMPED STEEL.

SIR,—We shall be much obliged if you or any of your readers could kindly tell us whether stamped steel has been used for ceilings in this country, and if so, where it can be obtained from, and whether any of your readers have had any experience with regard to the merits of the article.—Yours faithfully, ROBERT CROOKS & CO.

The Student's Column.

METALS USED IN BUILDING.—I.

INTRODUCTION.

THE term "metals," as here employed, includes only the "metals of commerce," as used by the architect. Some of these are not metals in the strictly scientific sense, and the vast majority are alloys.

The *raison d'être* of this series of articles is to describe the various ores which yield the metals in the first place, also their mode of occurrence in Nature. Then numerous alloys made from these metals and other mixtures will be defined, and where possible, the proportions which go to make them up given, especial stress, naturally, being laid on those most largely used in building, no matter how unimportant they may be from a general standpoint. From this it will be gathered that the metallurgical aspect of the subject will be treated in some detail. Many of the so-called "new metals" will be classified in their proper place, and although we have no intention to go into the merits of this or that man's invention, it will not be difficult to learn from what we shall say as to how far such inventions merit the new terms applied to them, and as to how far, on the contrary, they may be referred to metals previously known. The fact is that there is no end to the possible number of alloys; there are so many metals, and such a large number of them may be mixed together, and in such variable proportions, that the changes may be rung almost in infinity. We make no pretence, therefore, of dealing with all such alloys, even where they may be said to be indirectly connected with building, and if we were able to deal with all of them, it is very questionable whether any useful purpose would be served. For the difference between one of these alloys and another is frequently only so much as may be tolerated in the eyes of the law as not to lead to the infringement of patent rights. Such new metals, of the "subtle difference" order, will be grouped together and dealt with accordingly. We make this reservation, however; that when any slight difference in composition leads to an important alteration in the applicability of the metal, that will be distiuctly described in proportion to its significance in the building arts. True metals, therefore, will be given separately; whilst their alloys will be defined either specifically or generically, according to their importance to us.

Bearing in mind the difficulty experienced in uniting certain metals in the "cold" state, we have deemed it advisable to say something concerning soldering, especially in reference to the aluminium group.

The uses to which the more common of these metals and alloys are put, their relative ductility, malleability, flexibility, elasticity, brittleness, hardness, specific gravity, and (in some instances) structure will all be explained. Where it would appear to be of any value, the strength of the materials will be given, as also their behaviour under varying temperatures, including expansion, contraction, and "fatigue." Great attention will be paid to durability of both metals and alloys in the strict sense; this part of our work deals with chemistry and physics, and by the term "durability" we mean durability in all its aspects—as affected by the action of the weather, both indoors and out, abrasion and other forms of friction, intermittent application of pressure, and the like. Intimately associated with this is the subject of tarnishing bright metals. Other points to which we shall attract the student's attention in connexion with the uses of metals, will have reference to the composition of certain wall-papers, gilding, and internal decoration generally.

To some extent the subject of casting and moulding will be gone into, especially in regard to the casting of bronze. It will be useful to give some idea of the various qualities of metals of the lead group from the point of view of their suitability for making pipes; including the strength of these latter, apart from the strength of the alloys of which they are made. In certain cases the long association of one metal with another leads to the deterioration of both, and it sometimes happens that the durability of a metal is very largely influenced by a more or less earthy substance, in which it may be embedded or driven into, whereby unsightly stains are produced and general decomposition sets in. It is impossible, therefore, to dissociate the metals of commerce from non-metals, but we do not intend to deal with these latter on the present occasion more than can possibly be helped.

The subject will not be altogether limited to materials used in England; there are many alloys

useful for our purpose made on the Continent and in America which we shall consider. Some of these could be produced here from ores found in England or the colonies, whilst others are only to be made in the vicinity of the actual spots where one of the constituents is found.

One of the most important objects of this series is to explain to the student what the various metals used in building really are; when iron is disguised and then called "zinc," or a composition of metals is known as "lead," or a carefully-concocted mixture goes by the name of "copper," it is as well that these and kindred facts should be appreciated and the materials compared with the specification accordingly. It is becoming increasingly difficult to recognise the real from the spurious designation of such metals under ordinary circumstances, as the inferior articles are so often lent the powerful aid of the electro-bath and thus veneered. This more particularly applies to small goods.

Finally, our remarks on iron must be brief, as metals of that group have already been fully described in our columns.*

The Principal Ores.

The origin of the vast majority of ores is quite unknown. Several are simple substances that the chemist has never been able to split up, and these are known as elements. Ores, however, are most frequently of a compound character, as we shall presently see.

Iron.—Pure metallic iron is extremely rare in nature; it occurs in bodies that have fallen upon the earth from extra-terrestrial space—meteorites—also in certain basic igneous rocks. Pure iron can easily be procured in the laboratory by heating the oxide in a current of hydrogen gas, and by other methods. Iron chiefly occurs as oxides, carbonates, and sulphides, and is one of the commonest minerals in nature.

The four principal oxides are hematite, limonite, magnetite, and titanic iron. Hematite is found as "specular iron," having a splendent metallic lustre, but most commonly it is fibrous, whilst it sometimes occurs as amorphous aggregations. Limonite, unlike the preceding form of iron, never occurs in a definite crystallised manner, but is fibrous (when it is sometimes difficult to distinguish from hematite), or indistinctly crystalline; it may also be in rounded knobs, or as thin crusts on other minerals, or stalactitic, earthy and amorphous. The limonite of commerce is mostly of a brown tint, and occurs in the earthy or hard fibrous forms. Magnetite is abundant in octohedral crystals, also in minute irregular grains and as a massive rock. As the name implies, it is strongly magnetic. It is black, with a semi-metallic lustre and subconchoidal fracture. Titanic iron, titaniferous iron, or ilmenite, as it is variously termed, may be distinguished from magnetite, amongst other things by its rhombohedral crystals. It occurs frequently in thin plates or tables, as well as in diffused grains. It possesses a brown, semi-metallic lustre in reflected light. In its massive form, in Canada, it occurs as much as 90 ft. in thickness. Being a mixture of the oxides of iron and titanium, it is not always regarded as an iron ore.

The principal carbonates are chalybite, or spathose iron ore and clay iron-stone.

The sulphides comprise pyrites, which are yellow with a brassy lustre occurring in all rocks. Then we have the sulphate, copperas, and the arseniate, mispickel, found sparingly except in few localities.

OBITUARY.

MR. THOMAS CHATFEILD CLARKE.—On the 28th ult. the death of Mr. Thomas Chatfeild Clarke, F.R.I.B.A., F.S.I., took place at his house in Westbourne-terrace, Hyde Park. Mr. Clarke was born at Newport, I.W., in 1829, and established himself in London as an architect and surveyor in 1855. He soon took an influential position in his profession, and became surveyor to the Fishmongers' and Cordwainers' Companies, to the trustees of Dr. Williams's Library, and to other public institutions. He was well known as an expert in cases of compensation, and those having to do with light and air. He was the architect of the Bishopsgate School for Girls, the Royal Bank of Scotland in Bishopsgate-street, the new offices of the *Daily News* in Bouverie-street, the new school of the Mercers' Company in Barnard's Inn, and of various buildings in other parts of London. Mr. Chatfeild Clarke sat for Finsbury on the first and second School Boards for London. As a Liberal he contested Poole in 1884, Hammersmith in 1885, and Grantham in 1892, but did not succeed in entering Parliament. He was a Fellow of the Royal Institute of British Architects from 1862; and last year was President of the Surveyors' Institution. He was a magistrate for the County of Hants and for his native town of Newport. He married in 1859 a daughter of the late Mr. J. S. Nettlefold, who, with six sons, survives him.

* The *Builder*, Jan.-June, 1888.

GENERAL BUILDING NEWS.

CHANCEL, HOLY CROSS CHURCH, CANTERBURY.—The chancel of this church has recently been re-opened by the Bishop of Dover, after careful restoration. The church is an interesting specimen of Early Perpendicular work, having been erected towards the close of the fourteenth century, in place of a previous church which, like several other churches of early date, had been erected over the west gate of Canterbury. At the period named, the gate was demolished to make way for the well-known gateway which was then erected in its place, and the church was reconstructed on a new site close to it on the south. The chancel has a good panelled roof of oak, which has been repaired, several of the broken boards being renewed, the ribs re-painted, and the bosses re-coloured and gilt, while the boarding has been cleaned. Two traceried windows, with segmental heads, give light on the north and south sides, two on each side, but the original windows having been worked in friable Kentish rag-stone, had crumbled to decay, and had been renewed on the exterior in Roman cement. These have been entirely reworked in Bath stone, sufficient portions of the old work being retained to show that the new corresponds with the original work. On removing the cement coating it was found that there had originally been labels to all the windows. These have been restored. The eastern window is a memorial to the old Huguenot families who found a shelter in the parish from the persecutions in France. It was erected some time since by the Huguenot Society. The reredos, erected about twenty-five years ago, has been decorated and relieved by gilding. A floor of majolica tiles has succeeded the rough paving-tiles laid down when the reredos was erected, and an elaborate corona has taken the place of some poor gas-fittings. The works have been carried out by Mr. H. B. Wilson, builder, of Canterbury, from the designs of Mr. Loftus Brock, architect, of London. The entire cost has been defrayed by Mrs. Molony, the Lay Impropriator.

CONSTITUTIONAL CLUB, LINCOLN.—The foundation-stone of the new Constitutional Club, Lincoln, has just been laid. The building is arranged on the outer or street lines of the site, and has frontages over 200 ft. in length. The club has two main entrances, one in Broad-gate and the other in Silver-street. Both entrances lead into a central hall, which, owing to the peculiarity of the site, is circular on the plan, and from it ascends a stone staircase to the first floor of the building. The Silver-street wing, which is built close up to the street, contains, on the ground floor on the street side, a small office for a clerk, a scullery, pantry, and lavatories. Facing the garden are a committee-room, a kitchen, and a ladies' room. In the Broad-gate wing, south of the principal staircase, and approached therefrom, is the bar, facing the garden, a card-room opposite to it; and the whole width of the wing is a smoking-room, with the addition at one end of a raised daïs. The corner of the building between Silver-street and Broad-gate contains an irregular-shaped news-room, having a long frontage of over 50 ft. The first floor next to Silver-street contains an assembly-room, 64 ft. long by 26 ft. wide, with a separate stone staircase at the west end for the audience. At the opposite end of this room will be a platform, with an entrance to it from the central staircase of the club. Adjoining this staircase and over the Silver-street main entrance is an ante-room, approached from the central staircase. At the corner is a hexagonal-shaped room for honorary members, with a balcony outside. The Broad-gate wing contains on the first floor, over the card-room and bar, a billiard-room, and over the smoke-room is another billiard-room. On this floor there are lavatories placed. Over the ante-room and honorary members' room, on the second floor, there are three bedrooms for the caretaker. The basement on the Broad-gate side contains stabling for about thirty bicycles, and on the garden side is a skittle-alley, the latter, as well as the lavatories, being lined with white-glazed bricks. Advantage has been taken of the acute-angled corner formed by Silver-street and Broad-gate to obtain a hexagonal turret, surmounted by a lead-covered dome. The builders are Messrs. M. Otter & Co., Lincoln, and the architect is Mr. William Watkins, Lincoln.

BANK CHAMBERS, GATESHEAD.—New buildings, to combine the premises of the North-Eastern Banking Company, and the Gateshead offices of the Gas Company and also of the Water Company, have just been completed at Gateshead. The building, which is known as Bank Chambers, is three stories in height. The first is fronted with stone, the remainder of the building being of red bricks with mullion windows and stone facings. On the ground floor, with the entrance in High-street, is the new office of the North-Eastern Banking Company. The strong-room of the bank is constructed of concrete, in the basement of the building. Separated from the bank by a passage, are the new Gateshead offices of the Newcastle and Gateshead Gas Company, the entrance to these, as well as the entrance to the other portions of the building, being from Swinburne-street. There are cellars beneath the Gas Company's premises. The chambers have been built from designs supplied by the firm of the Mayor of Gateshead, Messrs. Thompson & Dunn, architects; Mr. Thos. Hutchinson, Gateshead, has been the contractor; Mr. John Murray, Gateshead, has done the plumbing; Mr. Scurfield, Gateshead, the painting; and all the ironwork has been supplied by Councillor Hindson, of that borough.

NEW CHURCH AND BUILDINGS, BROMLEY, KENT.—These new buildings, erected near the corner of Freelands and Upper Park-road, have just been completed, and were dedicated on the 26th ult. The buildings, which occupy a site in Freelands-road of 150 ft. by 70 ft., form one of the latest and most important extensions of the Presbyterian Church of England, and comprise—a cruciform church seated for about 720; a hall to accommodate about 240, and so arranged that it may easily be divided into separate class-rooms for Sunday-school purposes, by movable screens; and a complete suite of rooms for vestry, session, "Dorcas," and class purposes; there is also ample kitchen, heating-chamber, and lavatory accommodation. The church has small galleries in the nave and transepts, the choir and organ occupying the north gallery. The whole of the outside walls and the interior of the church are of red brick with Doulting stone dressings; the woodwork of ceiling, galleries, and seats is of pitch-pine, the pulpit, communion-table, &c., being of oak. Steel principals and purlins are used in the construction of the main roof. At the north-west corner there is a tower and spire 118 ft. high. The style of architecture adopted is Early Gothic, of the twelfth and thirteenth-century type, semicircular arches being frequently introduced. Mr. John C. T. Murray, of Westminster, is the architect, and the quantities were prepared by Messrs. W. H. Barber & Son, of Adelphi. The general contract has been carried out by Mr. John Bentley, of Waltham Abbey; the gas-fitters' work by Cannon & Sons, of Southwark; the heating by Musgrave & Co., London and Belfast; and the wood-block flooring is on Charteris & Longley's system. The organ is by Bevington & Sons, of Soho. Mr. George Barber acted as clerk of works.

RENDCOMB PARISH CHURCH.—The parish church of St. Peter's, Rendcomb, Gloucestershire, was re-opened on St. Peter's Day, after undergoing considerable alterations from the designs of Mr. F. R. Kempson, architect, of Hereford and Cardiff. New oak fittings, elaborately carved and wrought, have been provided throughout, a new vestry and heating-chamber built, and some interesting features brought to light, among them being portions of a thirteenth-century arcade, and the north doorway of the nave. Messrs. Collins & Godfrey, of Tewkesbury, were the contractors.

CONCERT HALL, BIRKENHEAD.—It has been decided to make an addition to the Claughton Concert Hall, Birkenhead, which comprises a large promenade-room. The contract has been let to Messrs. Lachlan & Batkin for 600*l*. The plans have been prepared and the work will be under the superintendence of Mr. T. Taliesin Rees, architect, of Birkenhead.

NEW PAROCHIAL HALL, ST. MATTHEW'S, BAYSWATER.—This building, the foundation-stone of which was laid by H.R.H. Princess Christian in December last, has now been completed. It consists of an apartment divided into a nave and side aisles by timber pillars and arches, and covered by an open roof boarded internally, due provision having been made for seeing and hearing. A platform at the west end has been planned, capable of increase when required, for the varying meetings that will take place. The half basement is fitted up as a gymnasium, with a wood-block floor and partially boarded walls. Behind it is a committee-room with separate approach, and in the rear is a kitchen adapted for service of tea-meetings and similar gatherings. There is ample lavatory accommodation for the use of the gymnasium. Two separate staircases lead to the main hall, of fire-proof construction, and two are provided in like manner to the gymnasium. The buildings have been erected by Messrs. Allen & Sons, builders, of Kilburn, under the superintendence of Mr. E. P. Loftus Brock. The style is that of the beginning of the seventeenth century, the angles being of red brick, while the same material, in contrast to the yellow brick of the general walling, is freely used, with an admixture of Bath stone in bands and strings,

UNION CHAPEL, LAVENDON.—The new Union Chapel at Lavendon has just been opened. Mr. Charles Dorman, of Northampton, was the architect; and Mr. H. Lay, of Lavendon, has carried out the work. Local stone has been used in the building of the chapel, and accommodation has been made for upwards of 150 persons.

CHAPEL, WALSALL.—On the 27th ult., Bridge-street Chapel, Walsall, which has been closed for some time for alteration and renovation, was re-opened. Last November the new work—designed by Messrs. Bailey & McConnell—was begun, and it has consisted of the erection of a new front, the putting on a new roof, together with various internal alterations to add to the convenience and safety of the building. The new front is in red brick and

terra-cotta in English Renaissance design. The total cost of the work has been about 2,000*l.*

SANITARY OFFICIALS' CHAMBERS, GLASGOW.—On the 25th ult., the memorial stone of the new buildings for the sanitary officers of Glasgow was laid. The new offices will be situated at the corner of Montrose-street and Cochrane-street, a short distance from the old premises, and only a few yards east from the Municipal Chambers in George-square. Designed by Mr. A. B. M'Donald, City Engineer, the new building will be of three stories, with a square tower rising to a height of 70 ft. at the corner where the two streets meet. The front elevations will be treated in the style of a modified Italian Renaissance. The first story is already completed, and has rusticated courses and round-headed windows. Above the main cornice the sky-line is broken by a balustrade, interrupted at intervals by pediments and finials. The estimated cost of the new chambers is about 17,000*l.*, and the site cost 11,000*l.*

PRIMITIVE METHODIST CHAPEL COVENTRY.—On the 27th ult., the new chapel in Ford-street, Coventry, was opened. The plans for the new chapel were prepared by Mr. John Wills, of Dudley. Mr. J. Worwood's tender for 1,730*l.* was accepted for the erection of the building. The building is in the Gothic style, and the materials used are red brick, with Bath stone dressings. The accommodation comprises a chapel on the ground floor, 66 ft. by 33 ft., with school-room, four class-rooms, and vestry, partly in the basement. The principal entrance to the chapel, which is approached by a flight of steps, is from Ford-street. The front of the building is gabled, with an octagonal ornamented pillar at each end, finished with a cusped finial. The sitting accommodation of the chapel is for about five hundred persons, this being provided without the introduction of galleries. The choir is accommodated on a raised platform at the end of the chapel immediately behind the rostrum, with the organ chamber to the left. The seats and woodwork of the interior are of pitch-pine varnished.

PRESBYTERIAN CHURCH, CARLISLE.—On the 27th ult., Fisher-street Presbyterian Church, Carlisle, was re-opened after alteration and enlargement. The front of the building is in three planes, the towers containing the gallery staircases, on either side of the main front, projecting about a yard towards the street. Each of the gallery staircases has a separate entrance from the outside, and communicates also with a large central vestibule. The chief feature of the front gable is the two-light window over the entrance gable. The two towers on either side are terminated by high-pitched roofs, covered with green slates and ornamental cresting, and screened by battlemented parapets. The church roof is in three sections, there being separate aisle roofs over the gallery on either side, and a large open roof over the nave of the church. The ceiling is divided up by ornamental principals into seven bays, which are again marked out into diagonally boarded panels by wrought mouldings. The upper face of the ceiling is flat, for acoustical effect, the ceiling being five-sided. Between the nave and gallery roofs, supported on columns, resting upon those carrying the gallery, is the clear-story, running along the whole length of the church, and having four lights to each bay. Each light is trefoil-headed, with a moulded Pointed arch over the same, carried on circular columns with turned caps and bases, resting upon the clearstory sill, below which is a cornice. At each side of the chancel is a two-light Pointed window. The glass has been removed from the whole of the old windows that remain, and new lead lights substituted. From the central vestibule, which is lighted by a couple of lancets on either side of the entrance and by the quatrefoil opening over the main entrance, is a seven-light window, and all the vestibule screens and doors are glazed with lead lights in ornamental patterns. The pulpit, which is the gift of the architect, is of oak, octagonal in form. The gallery, providing accommodation for 362, is entirely new, and is formed without trusses. The whole of the inside woodwork, with the exception of the oak pulpit and choir, is pitch-pine, varnished. Accommodation is now provided for about 800 worshippers in all. The total cost of the reconstruction has been 3,400*l.* The names of the various contractors and tradesmen are as follows:—Builders and carpenters and joiners, Messrs. W. & H. Davidson; painter and decorator, Mr. W. N. Ballantine; slater, Mr. C. J. Nanson; plasterer and ornamental work, Messrs. R. M. Ormerod & Son; plumber, Mr. W. Anderson; heating engineers, Messrs. Musgrave & Co., Ltd., Belfast; ventilating engineers, Messrs. E. H. Shorland & Bro., Manchester; stone carver, Mr. J. Hewson, Maryport; wood carver, Mr. Gandy; stained glass artists, Messrs. Swaine Bourne & Son, Birmingham; ornamental railing and fittings, Messrs. Cairns & Co.; brass and iron gasfittings, and brass pulpit and communion table desks, Messrs. Jones & Willis, London. The whole of the work was carried out under the immediate supervision of Mr. T. Taylor Scott, of Carlisle, the architect.

PRESBYTERIAN CHURCH, BELFAST.—The laying of the foundation-stones of the new Presbyterian church in Falls-road, Broadway, took place on the 29th ult. The outside dimensions of the church are about 90 ft. by 60 ft., and the main front is placed so as to face Broadway. A simple treatment of the thirteenth-century Gothic has been adopted as the most suitable style for a church built mainly of red brick. The plan comprises a nave and aisles, with shallow transepts, session-room, heating-chamber placed at the rear. A vestibule will give access to the church and also to the galleries by means of wide staircases at each side. One of these will be contained in a square tower, several lancet windows affording light. At the belfry stage are four large splayed windows, with moulded arches, above which runs the boldly-projecting cornice of the spire. The latter is a square on plan, covered with copper, and terminating in a gilt copper weather-vane at the height of 120 ft. On the other side of the front is a gabled projection, with buttresses at the angles. A five-light traceried window forms the central feature of the front gable. A bold finial forms the termination of the gable at a height of 56 ft. All the windows have lance-shaped heads, and will be filled with cathedral glass in geometrical patterns. All the walling is of best perforated red brick, with red Dumfries sandstone, weatherings, sills, and dressings. In the interior five arches on each side of the nave rise above the galleries and support the roof, which is divided into three spans. Cusped and pointed arches form an arcade along the gallery front. A platform of pitch-pine and walnut will be placed in a recess in the rear gable, under a moulded arch resting on engaged columns. All the internal joinery will be of yellow and pitch pine, varnished. Mr. Thomas M'Millan, Belfast, is the contractor for the entire work, and the architects are Messrs. Young & Mackenzie.

MISCELLANEOUS.

TOURIST GUIDE TO THE CONTINENT.—This is a guide issued by the Great Eastern Railway Company for travellers *viâ* Harwich. It contains many maps, on which cycling routes are marked in addition to other features, and a good deal of useful information. It can be had at the Continental department, Liverpool-street Station.

CHANGES OF ADDRESS.—Messrs. Colledge & Bridgen, of Wolverhampton, ask us to mention that they have changed their address to 67, Church-lane, Wolverhampton.——Messrs. Joseph Robinson & Co., the makers of "Robinson's cement," have changed their address, from 206, Phœnix-street. Somer's Town, to Brewery Wharf, Bridge-street, Greenwich.

BRISTOL MASTER BUILDERS' ANNUAL EXCURSION.—The Bristol Master Builders' Association held their annual excursion on the 27th ult., visiting Bridgwater and the Quantocks. Mr. E. H. Hill, of Bridgwater, conducted the party to the various spots. Dinner was served at the Clarence Hotel, Bridgwater, Mr. George Wilkins (President) occupying the chair. Mr. W. H. Cowlin gave "The National Association of Master Builders," and remarked that the body appealed to their sympathies, and he hoped that it would be still more successful in the future. Mr. Krauss replied, and urged that the Association was not in existence for the purpose of crushing workmen. Their principle was a good days work, and a good day's pay. They had had some trouble in the building trade in Bridgwater, but he thought that if they had had a society there the trouble might have been settled some time ago. Mr. Church also replied, and said that he thought that the builders in every town and city should be affiliated to the Association. The Association took a great deal of trouble in going into every matter connected with the trade, giving advice, publishing rates of wages, accounts, the state of trade, and various other statistics. He hoped that before long Bridgwater would be affiliated. Mr. H. J. Spear proposed, and Mr. Church seconded, a vote of thanks to Mr. Hill, which was carried with acclamation. Mr. Brown gave "The Merchant Traders." Mr. May, in reply, said that, on behalf of the timber trade, he should like to say that the hopeful tendency was a great source of satisfaction. Many of them had their hands full—a great deal more so than in the depressing times through which they had passed. Mr. Ambrose next gave "The Bristol Master Builders' Association," and remarked that the Association was formed for the advancement of trade interests. He wished the Association all success. The Chairman replied, and said that the Association was doing good work in Bristol. He thought that if it were not for the Association they would have had more trouble in Bristol. There was some trouble, but they were able to keep it under. Other toasts followed.

WOLVERHAMPTON DISTRICT BUILDING TRADES FEDERATION.—The half-yearly general meeting of the Wolverhampton District Building Trades Federation was held at the "Pack Horse" Inn, Dudley-street, on the 27th ult., the chair being taken by the President (Mr. P. Lalley). The first half-yearly report stated that the Federation had been called into existence by the fact that trades unionists in the building trade recognised the need for closer and more united action. They believed that the bond of union in the trade was firmer than it had been for some time past. A few little disputes had taken place, but as yet there had been none necessitating any loss of time.—The Chairman said that during the last six months there had only been one dispute, and that was settled amicably on a deputation from the Federation waiting on the master. The object of the Federation was to benefit all classes in the building trade. The membership now numbered about 800, and there was no reason why it should not be increased to 1,000. The report was adopted. The following resolution was moved by Mr. Kelly, and seconded by Mr. Dudley:—"That we pledge ourselves to use every effort to insure the success of this Federation by inducing all workers in the building industry of Wolverhampton and district to become trades unionists." The resolution was ultimately carried.

NEW BUILDINGS FOR THE PARIS "FIGARO."—The proprietors of the *Figaro* have opened an architectural competition, limited to French architects, for designs for an important addition to their premises in Rue Drouot.

SANITARY INSPECTORS' ASSOCIATION.—VISIT TO PARIS.—The following is an outline of the arrangements proposed by the French Society of Sanitary Engineers and Architects:—Saturday, July 6, 8 a.m., a deputation from the committee of direction will meet the train at St. Lazare station; 11.30 a.m., breakfast at Eiffel Tower; 2 p.m., visit to the Sanitary Exhibition at Galerie des Arts Libéraux, near the Tower Eiffel, and visit to the Russian Exhibition, Champ de Mars. Sunday, July 7, 9 a.m., visit to the Irrigation Works at Asnières. Monday, July 8, 9 a.m., opening of the Congress; lectures and reports on "treatment of house refuse in cities," and other papers on sanitation; 5 p.m., visit to disinfecting stations. Tuesday, July 9, papers and discussion continued; 3 p.m., visit to the Sewage System of Levalloy Puret, near Paris; 4 p.m., visit to the Glass Works of MM. Oppert, at Clichy. Wednesday, July 10, further papers on sanitary subjects; 2.30 p.m., visit to the Modern Girl-Lycée, in Paris; 4 p.m., visit to the Paris sewers. Wednesday evening, probably a banquet, at present under arrangement.

BREST HARBOUR.—The French Parliament has called for a vote of 8,100,000 francs in order to complete without further delay the works at the harbour and the port of Brest, which received official approval some years ago.

INSTITUTION OF ELECTRICAL ENGINEERS.—The conversazione of the Institution of Electrical Engineers held on Wednesday evening last at the Galleries of the Royal Institute of Painters in Water-colours was a great success. Mr. R. E. Crompton (the President) and Mrs. Crompton received the guests. A great many well-known electricians and scientific men were present, the rooms being crowded. The band of Her Majesty's Royal Horse Guards gave musical selections during the evening.

"ST. JOHN'S LODGE," FULHAM.—Messrs. Walton & Lee will offer for sale on the 16th inst. at the Mart, Tokenhouse-yard, the freehold property known as St. John's Lodge. The property has frontages to the North End-road and Epirus-road of 113 ft. 6 in. and 140 ft. 2 in. respectively.

INSTITUTION OF CIVIL ENGINEERS.—The Council of the Institution of Civil Engineers has reappointed Mr. Hugh Lindsay Antrobus as Treasurer, Dr. William Pole, F.R.S., as Honorary Secretary, and Mr. James Forrest as the Secretary.

MONUMENT TO CARNOT AT NICE.—A monument to the memory of President Carnot has been erected at Nice, on the Place Cassini. The design is by M. Tournaire, architect, and is composed of a hemispherical base supporting a marble pedestal bearing a column of the same material, which carries a bronze portrait-bust of Carnot, to which a figure of a child offers a garland of flowers. The sculptural portion has been executed by M. Convers.

SEWAGE TREATMENT.—The Council of the Institute of Civil Engineers of Ireland, has awarded a Mullin's Gold Medal to Mr. W. Kaye Parry, A.M.I.C.E., for his paper entitled, "The Application of Recent Advances in the Study and Treatment of Sewage."

LEGAL.

IMPORTANT POINT UNDER THE METROPOLIS MANAGEMENT ACT, 1862.

THE case of Allen and another *v.* The London County Council came before Mr. Justice Wills and Mr. Justice Wright, sitting as a Divisional Court of Queen's Bench, on the 1st inst., for judgment, it being a special case stated by a Metropolitan police-magistrate, who made an order for the demolition of a building in the Metropolis as being beyond the building-line. The case was of some importance, as the substantial question raised was whether the decision of the architect as to the building being beyond the building-line was conclusive and binding on the magistrate.

The facts were as follows:—A complaint was made to the magistrate by the London County Council that the appellants began to erect a building beyond the general line of buildings on the north-western side of Berchington-road without the consent of the County Council, contrary to Section 75 of the Metropolis Management Act, 25 and 26 Victoria, cap. 102. It appeared that the appellants on November 13 last commenced to build four shops and houses upon the land at the corner of Berchington-road. The front in Berchington-road extended 16 ft. beyond the general line of buildings, as determined by the certificate of the Superintending Architect of the London County Council, who stated in it that the main fronts of the buildings in a certain row of houses formed the general line of buildings

on the north-western side of Berchington-road, "in which road the building in question is situate, and the building in question would project beyond the prolongation of the said general line. On behalf of the appellants it was contended that the architect had not by his certificate found that the building was situate in the "street, place, or row of houses" described as the north-western side of Berchington-road, and that if he had so found, he had placed the building in a "street, place, or row of houses" in which the same was not situate. The respondents' contention was that the certificate had determined that the building was situate in Berchington-road, and that such determination was binding upon the Magistrate. The learned Magistrate felt bound by the decision in the case of the "London County Council *v.* Cross," and directed the demolition of so much of the building as was beyond the line. The questions for the Divisional Court to determine were (1) whether the certificate showed that the house in question was situate in the street, place, or row of houses on and for which the general line of buildings was determined; (2) Whether it was the duty of the architect to decide and find the situation of the appellants' building, and if so whether his decision was binding on the magistrate.

Mr. Justice Wills, in giving judgment in favour of the London County Council, said that the question raised was whether the certificate of the Superintending Architect of the London County Council, who now represented the Metropolitan Board of Works under the Metropolis Management Act, 1862, deciding whether a particular building to which the building-line applied in a street was decisive of the point in dispute. Looking at the Act, apart from the Authorities, he (Mr. Justice Wills) would have thought the Tribunal to decide that was the magistrate. The matter had been much discussed, both in that Court and the House of Lords. It seemed to him that the authorities were not satisfactory. In the case of "Barlow *v.* Vestry of St. Mary Abbott's, Kensington," decided in 1886, Lord Watson held that the architect was the person to decide, while Lord Bramwell held it was the magistrate. However, Lord FitzGerald agreed with Lord Watson, and the majority of those learned Lords, therefore, were against the view that the magistrate was the deciding tribunal. In the case of the London Couuty Council *v.* Cross, which was argued in a Divisional Court, Mr. Justice Denman and Mr. Justice A. L. Smith both adopted the view that the architect was the person. But as that case was subsequently overruled on another point it could not be called a binding judgment, and it seemed better to follow the views of the majority of judges than to set up his own opinion. The point in question was not so important as it might seem at first sight, because the London Act of 1894 had made provision for the appointment of a tribunal of appeal against the architect. On the second question the architect must be taken as meaning to decide, and determining, that the building in question was in the street to which the building-line applied.

Mr. Justice Wright concurred.

Leave to appeal was granted.

Mr. Channell, Q.C., and Mr. Wedderburn appeared for the appellants; while Mr. Horace Avory and Mr. Daldy represented the respondents.

CAPITAL AND LABOUR.

THE CROYDON SCHOOL BOARD AND THE TRADE UNION CONTRACT CLAUSE.—The Croydon School Board met in committee on the 27th ult,. to consider the subject of the memorial from the Croydon Labour Council for the insertion of a clause in all contracts issued by the Board, that the Trade Union rate of wages shall be paid, under penalty, and the rules and regulations of the Union enforced. A deputation from the Croydon and District Builders' Federation—consisting of Messrs. S. Page, J. Smith, and W. Pearson (Hon. Sec.)—waited upon the Board with a memorial in reply to that of the Labour Council, in which they (the master builders) stated that "Croydon was included in a twelve-miles' radius in 1892 by an agreement between the Central Association of the Master Builders of London and the London Labour Federation and carried into effect without consultation with or communication to the trade interested in this arrangement. The Croydon and District Builders would not submit to the ruling and dictation of the London societies, they having no interest in the trade of the town. That to enforce the new arrangement a strike was ordered by the London Trades Council, which took effect in November, 1892, and continued till about March, 1893, and failed in its object. There has been for several weeks a partial strike with the Federated men belonging to the London Labour Federation, and is still going on, only a few men have been withdrawn, principally carpenters and joiners, to make a disturbance in the trade, and it is submitted that, although a general call has been made upon the trade by the Federation to enforce the London rules, there has been no general response, and in many instances the men have elected to stand by the existing rules of working rather than be ruled over by a very small section of the trade. It is considered that the rate of wage and general working is more than equivalent to the London working arrangement, and free from the dictation that has been so much practised by the exacting detail that has been adopted in several cases. That the Association would point to the fact that for upwards of thirty years there has been no friction in the trade, and also to say that wages and working will compare with any of the large towns in the country, and with slight difference to that of London. The Master Builders' Association consists of the principal builders of the district, numbering some fifty members; they have never recognised the London Federation rules as adopted by the Labour Council, and contend that the current rate as paid by the Association is generally satisfactory to the men." They also pointed out that the section making the application are a very small body, about one-third of the trade of the town, also that wherever such clauses have been adopted, no good results have been recorded. The Chairman produced a report from the Committee, recommending that the prayer in the memorial of the Croydon Labour Council be not granted, and in a formal manner moved its adoption, reserving to himself the right to vote as he thought fit. The Rev. J. Critchison seconded the adoption of the report. The Rev. W. F. H. Randolph supported, stating that it was within his own knowledge that men as well as employers were opposed to the clause, and he had been asked definitely to oppose it. He had taken the trouble to consult working men, and had taken three trades—the bricklayers, painters, and carpenters—and he found them absolutely against the Union in any one of its forms. they abhorred it, and could not stand its domination, and dictation, and coercion. He found that the Unionists represented about one-third of the working men. In one case over 200 men were employed, and only eight of them were Unionists, and he knew of another case in which the contractor absolutely refused to employ Union men.—Mr. W. V. Smith moved an amendment, that the prayer of the memorial should be granted, and Mr. Mackenzie seconded, but upon being put to the meeting it was lost, and the report was agreed to.

MEETINGS.

SATURDAY, JULY 6.

Liverpool Engineering Society.—Excursion to the Snowdon Mountain Rack Railway, in North Wales. 1

MONDAY, JULY 8.

Royal Institute of British Architects.—Special genera meeting (for members only), to receive and consider a recommendation of the Council to establish a class of subscribing members, to be called "Craftsmen," and to make and adopt by-laws which shall define, regulate, and prescribe the conditions of membership and the mode of election and admission, and the privileges, obligations, and benefits of, and the payments to be made by, the proposed new class. 8 p.m.

Clerks of Works' Association (*Carpenters' Hall*).—Monthly meeting 7.30 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

9,836.—BRICKS: *J. Cycle and others.*—This patent relates to the facing and enamelling of bricks other than fire-bricks by using low fusion glazes, enamels, and clays. No particular method of application is given.

9,893.—FANLIGHT-OPENER: *A. Purness.*—This invention consists of a metal plate, having a slot up its centre, and fastened by means of screws to the outside of the inner frame of the fanlight. A second metal plate is swivelled to the outer frame, and has a projecting stud or pin which slides in the slot above mentioned and holds the fanlight in an open position.

12,034.—PARTITIONS: *E. Reiss.*—Relates to the shape and arrangement of stones or plates forming walls and partitions of buildings. The stones are made with triangular or polygonal-shaped edges, and are arranged in rows with the slanting sides downward, so as to form wedge-pieces.

12,837.—WINDOWS: *H. Holmes.*—Consists in improvements in sash-windows by having (1) the inside linings, together with a portion of the staff-bead, held in position by hinges and bolts; (2) each sash is hung by a single cord which passes down each side in a rebate, and is continued under the sash in a groove; weights being at each end of the cord, the window is practically supported at its lower corners; (3) the parting bead is made removable, and the window can be swivelled on a bolt and socket arrangement fixed near the bottom.

13,394.—WINDOWS: *M. Puzey.*—Deals with the sashes of sliding-windows, which are hinged on one side and have a part sliding in runners inserted in the pulley-stile. A cocked bead, secured to a hinged piece and mounted on the other stile of the window-frame, is made to enter a groove in the lower sash, when same is closed, by the action of a projection or guard formed on the hinge-piece beforementioned.

15,856.—HOUSING TIMBER: *A. Slater.*—Pertains to a machine capable of being driven by power for housing timber between mortise-holes, &c. The apparatus consists of revolving cutters arranged to a frame or grip for holding the timber to be housed, and is furnished with rollers on either side to facilitate adjusting of the timber. The cutter consists of a blade fixed on a revolving head, which has horizontal and vertical motions, and can be fitted with stops to regulate the stroke in either direction.

7,261, TILES, *A. Kliemchen.*—Relates to a ridged roofing tile which provides ventilation of the roof. The tiles overlap each other with undulated rebate like joints at their longitudinal edges. At these junctures two projecting ridges on one tile are arranged to bear firmly against corresponding depressions in the adjoining tile. Between these points of contact certain spaces are left for entilating purposes,

7,459, BRICKS: *G. Balsley.*—Relates to bricks having a square frustrum-shaped projection on their upper sides and corresponding hollows on their lower sides, so that they are vertically locked together when laid.

NEW APPLICATIONS FOR LETTERS PATENT.

JUNE 17.—11,722, T. Phipps, Water-pipes to Prevent Bursting from Frost.—11,729, W. Shaw, Ventilating Houses, Halls, Theatres, &c.—11,744, W. Green, Ventilation of Public Buildings, &c.—11,761, A. Fossel, Machinery for Cutting Wood for Builders' Laths, &c.—11,782, C. Dargie and S. Cooke, Supporter or Fastener for Window-sashes, Sliding Doors, &c.

JUNE 18.—11,809, J. Hunt, Holding Doors Partially Open when on the Chain.—11,862, W. Hall, Spring Devices for Counterbalancing Window-sashes, &c.

JUNE 19.—11,896, C. Monday, Vertically Sliding and Retaining at any Level Window or other Sashes or Doors without Sashes or Weights.—11,907, E. Fletcher and T. Carran, Fasteners for Windows.—11,918, H. Saqui, Bolts and Fasteners for Doors, Windows, &c.—11,930, H. Sadin, Employment of Schist in the Manufacture of Bricks.—11,934, J. Birchall and J. Astley, Furnaces of Ovens, Kilns, &c.

JUNE 20.—12,022, W. Akerman, Roofing Tiles.

JUNE 21.—12,051, A. Franklin, Securing Door-handles.—12,056, H. Dobson, Automatic Sash-lift or Quadrant.—12,064, E. de la Sauce, Metal Window-frames.

JUNE 22.—12,118, T. Westley, Draught, Dust, and Weather Excluder for Doors.—12,152, W. Schuschitz, Reproducing Mouldings on Plane Surfaces.

PROVISIONAL SPECIFICATIONS ACCEPTED.

9,825, T. Sabine, Sockets of Pipes for Drainage, Sewerage, &c.—9,971, T. Boon, Brick-making.—10,110, C. Marson, Slabs for Covering Ceilings and Partitions.—10,287, W. Kershaw, Water-pipes.—10,352, G. Shaw and others, Plaster of Paris.—10,555, C. Raleigh, Boring-bits for Rock-drills.—10,770, W. Bates, Construction of Windows.—11,267, W. Slark, Cement.—11,294, T. Sylvester, Windows.

COMPLETE SPECIFICATIONS ACCEPTED.

(Open to Opposition for Two Months.)

13,529, W. Matthews, Combination Inlet and Outlet for Baths, &c.—14,960, W. Griffith, Butt and Hinge for Doors and Gates.—15.811, F. Jacks, Back Draught-preventing Chimney Top and Ventilator.—23,211, W. Cruickshanks, Windows and Window-cases.—471, G. Grossheim, Stencil-plates for Painters and Decorators.—8,127, P. Rodorf and D. Rodorf, Fastening Devices or Clamps for Building Purposes, &c.—9,013, J. Howard, Tools for Making Frames.—9,714, W. Wise, Glass-plates.—9,761, W. Appleford, Flushing Apparatus for Water-closets, &c.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

JUNE 20.—By *C. L. Lilley:* 30, Woodfield-rd., Paddington, f., r. 36*l.*, 450*l.*; 53, Sutherland-av., u.t. 68 yrs., g.r. 11*l.* (sold privately).—By *J. F. Stonehewer:* 2, Camdengardens, Kentish Town, u.t. 37½ yrs., g.r. 6*l.* 8s., 325*l.*—By *Tabernacle & Son:* 15, Goldington-st., St. Pancras, u.t. 49 yrs., g.r. 10*l.*, r. 50*l.*, 390*l.*; 26, 28, and 30, Aldenham-st., Somers Town, u.t. 25 yrs., g.r. 15*l.*, 600*l.*; 31, Chalton-st., St. Pancras, u.t. 34 yrs., g.r. 18*l.*, r. 50*l.*, 320*l.*; 82, Chalton-st., and stable, &c., u.t. 34 yrs., g.r. 24*l.*, 440*l.*; 2 and 3, Crawley-mews, Somers Town, u.t. 48 yrs., g.r. 4*l.*, r. 48*l.*, 250*l.*—By *Newbon & Co.*: 6, 11, and 12, Alfred-st., Islington, u.t. 31 yrs., g.r. 11*l.* 13s., r. 120*l.*, 950*l.*; 3, Gordon-st., u.t. 31 yrs., g.r. 5*l.*, r. 38*l.*, 275*l.*; 24, Haverstock-st., u.t. 29 yrs., g.r. 5*l.*, r. 40*l.*, 280*l.*; 23 to 33 (odd), Grosvenor-st., u.t. 860 yrs., g.r. 36*l.*, r. 132*l.*, 900*l.*; 62, 64, 66, and 68, The Broadway, Hackney, f., r. 166*l.*, 1,885*l.*; 1, Stavordale-rd., Highbury, Highbury, u.t. 81 yrs., g.r. 8*l.*, r. 45*l.*, 410*l.*; 80, Drayton-pk., u.t. 81 yrs., g.r. 8*l.*, r. 44*l.*, 410*l.*; 2 to 14, Gladstone-st., Holloway, f., r. 98*l.*, 1,345*l.*; 58, Marlborough-rd., u.t. 72 yrs., g.r. 7*l.* 7s., e.r. 42*l.*, 360*l.*—By *Stimson & Sons*: 8 plots of freehold building land, Percy-st., Shepherd's Bush, 500*l.*; 47 and 49, Coldharbour-lane, Camberwell, u.t. 28½ yrs., g.r. 24*l.*, r. 80*l.*, 310*l.*; 1 to 4, and 6 to 9, Nile-ter., Old Kent-rd., u.t. 37 yrs., r. 4*l.* 17s. 6d., 1,410*l.*; 127, 133 and 135, Coburg-rd., u.t. 28½ yrs., g.r. 33*l.*, 170*l.*; 1 g.r. of 66*l.* 10s., Smyrk's-rd., u.t. 26 yrs., g.r. 30*l.*, 450*l.*; 64 to 70 even, Smyrk's-rd., u.t. 26 yrs., g.r. 14*l.*, 480*l.*; 72, 74, 76, 80 to 86, 94 to 100 even, Smyrk's-rd., u.t. 26 yrs., g.r. 42*l.*, 1,460*l.*; 55 to 63 odd, Smyrke's-rd., u.t. 24½ yrs., g.r. 17*l.* 10s., 640*l.*; 72, Ady's-rd., Peckham, u.t. 80 yrs., g.r. 6*l.*, r. 30*l.*, 280*l.*; 30 to 40 even, Atwell-rd., u.t. 56 yrs., g.r. 18*l.*, 900*l.*; 1 to 6, Little Marlborough-pl., Old Kent-rd., u.t. 48 yrs., g.r. 6*l.*, 560*l.*; 17, Keston-rd., Peckham, f., r. 28*l.*, 400*l.*; 25, 27, 33, and 35, Keston-rd., u.t. 90 yrs., g.r. 28*l.*, r. 112*l.*, 810*l.*—By *Arber, Rutter, & Waghorn*: F.g.r. of 34*l.* 17s., Belmont-rd., Twickenham, u.t. 60 yrs., 905*l.*; f.g.r. of 8*l.*, Cirencester-st., Paddington, reversion in 54 yrs., 200*l.*; i.g.r. of 50*l.*, Westbourne-ter., u.t. 41 yrs., 900*l.*; i.g.r. of 120*l.*, Elgin-av., u.t. 64 yrs., g.r. 36*l.*, 1,705*l.*

JUNE 21.—By *Cane & Co.*: 24, Pepy's-rd., New Cross, u.t. 63 yrs., g.r. 10*l.*, e.r. 60*l.*, 455*l.*; 121 and 129, Albert-rd., Peckham, u.t. 70 yrs., g.r. 11*l.*, r. 71*l.*, 555*l.*—By *Ventom, Bull, & Cooper*: I.g.r. of 10*l.* 10s., Cavendish-rd., Sutton, u.t. 80 yrs., g.r. 1*l.*, 195*l.*—By *Field & Sons*: 5, Peckham-rd., Camberwell, u.t. 25 yrs., g.r. 16*l.* 18s., 350*l.*; 25, 27, and 29, Beddome-st., Walworth, u.t. 53 yrs., g.r. 12*l.*, 460*l.*; 17, Hazelmere-rd., Peckham, u.t. 69 yrs., g.r. 6*l.*, r. 30*l.*, 190*l.*, 16, 18, 20, and 22, Carew-st., Camberwell, u.t. 73½ yrs., g r. 18*l.*, 630*l.*—By *H. C. Newson*: 348, High-rd., Tottenham, f., r. 55*l.*, 500*l.*; 18 and 20, Braemar-rd., u.t. 67 yrs., g.r. 8*l.*, 200*l.*; 2 enclosures of land, 4 a. 0 r. 26 p., High-rd., Welcombe, North Devon, f., 185*l.*—By *Weatherall & Green*: 1a, 5, 7, 9, 13, 15, 17, 33, 39, 49, 51, 55, 57, and 59, Buxton-rd., Chingford, f., r. 380*l.*, 4,120*l.*; "Gordon Villa," Mornington-rd., f., r. 25*l.*, 430*l.*—By *W. R. Nicholas & Co.*: 2 cottages and plot of building land, Newbury-lane, Compton, Berks., 125*l.*; 5 plots of building land, Ilsley-rd., 160*l.*; 2 plots of building land, 4 a., 75*l.*

JUNE 22.—By *Dilley & Son* (at Huntingdon): Fullard's Farm, Wistow, Hunts., 100 a. 0 r. 34 p., c., 900*l.*

JUNE 24.—By *G. Gouldsmith, Son, & Co.*: 5, Wiltoncres., Belgravia, and stabling, u.t. 29 yrs., g.r. 15s., r. 300*l.*, 4,000*l.*—By *Mullett, Booker, & Co.*: 17, Lancaster-gate, Hyde-pk., and 7, Lancaster-mews, f., 4,000*l.*; 77, Clarendon-rd., Notting Hill, u.t. 44½ yrs., g.r. 12*l.* 10s., r. 65*l.*, 400*l.*—By *Leopold Farmer*: I.g.r. of 165*l.*, Albert-mews, St. John's Wood, u.t. 59½ yrs., g.r. nil, 2,725*l.*; 190, Belsize-rd., Hampstead, u.t. 59 yrs., g.r. 11*l.*, r. 80*l.*, 670*l.*—By *Fortescue & Branson*: 37, Frithfield-gardens, Shepherd's Bush, u.t. 80 yrs., g.r. 8*l.* 8s., 300*l.*; 90, Wadhurst-rd., Battersea, u.t. 33 yrs., g.r. 2*l.* 10s., 130*l.*; 237, Kensal-rd., Chelsea, u.t. 65 yrs., g.r. 9*l.*, 195*l.*—By *May & Rowden*: No. 119, Regent's-st., beneficial lease for 6½ yrs., 275*l.*—By *A. H. Turner & Co.*: "The Lodge,"

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENT.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
Laundry Buildings	Sculcoates (Yorks) Union	5*l.* 5s. and 3*l.* 3s.	July 31
*School Buildings and Master's House	Ludlow Grammar Schs.	25*l.* and 10*l.*	Aug. 2
*Sewage Scheme	Tendering R.D.C.	.....	Sept. 14

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Making-up Cecil and Horace-roads, Boscombe	Bournemouth Corp.	F. W. Lacey	July 9
Road Works, Old Christchurch-road, &c.	do.	do.	do.
Reconstruction of Falmouth and Gaol-roads	Horfield U.D.C.	A. P. J. Cotterell	do.
Sewering, Levelling, Metalling, &c. High-street	Mansfield Corp.	R. F. Vallance	do.
Engineering Works and Shaft, Kirkstall-road, Leeds	R. Wainwright & Son	Thos. Winn	do.
Drainage Works, Harpole	Northampton R.D.C.	R. W. Wood	do.
Street Improvements, Scunthorpe, Lincs.	.....	R. A. Robertson	do.
Shops and Houses, Whitehall-road, Hipperholme, Yorks.	.....	W. H. D. Horsfall	do.
Additions to School, Kintore, Aberdeen, N.B.	.....	Ellis & Wilson	July 10
Six Houses, Askern, Doncaster	.....	J. H Brearley	do.
Rebuilding Harthope Burn Bridge	Durham C.C.	W. Crozier	do.
Sewering, Kerbing, &c. Worksop	Wm. Peck	J. Allsop	do.
Stoneware Pipe Sewer (1,166 yds.)	Worcester Corp.	T. Caink	do.
Residence, Bridlington, Yorks.	Wesleyan Chapel Trus.	J. Earnshaw	do.
Public Library, Trinity-road	Bristol Corp.	W. V. Gough	do.
Warehouses and Stables, Working-street, Cardiff	Noah Rees & Son	Jones & Co.	do.
Additions to Business Premises, Ridgeway, Plympton, Devon	C. B. Shuker	Wise & Wise	do.
Additions to Schools	Griffithstown Sch. Bd.	E. A. Lansdowne	do.
Police Station, Guiseley, Leeds	West Riding C.C.	J. V. Edwards	do.
Flagging and Paving, Upper Choriton-road, &c.	Stretford U.D.C.	H. Royle	do.
Institute and Reading Room, Handsworth, near Sheffield	J. C. Stott	.....	do.
*Repair of Stonework at Workhouse	Camberwell Guar.	*Official*	do.
*Purchase of Ballast	Hackney Union	do.	do.
Flints and Gravel, Aldworth, &c.	Wantage R.H.D.	do.	July 11
Library Extension, Cwmpark, Pentre, Glam.	Building Committee	J. Rees	do.
Sewage Works, Ravensthorpe	Heckmondwike U.D.C.	Jas. Saville	do.
*Granite Spalls	Brighton Town Coun.	F. J. C. May	July 12
Sanitary Depot, &c. Seymour-road	Gloucester Corp.	R. Read	do.
*Painting, Repairs, &c. at Infirmary	St George's-in-the-East Guardians	Wilson, Son, & Allwinckle	do.
Granite Road Metal	Stevenage U.D.C.	*Official*	do.
*Purchase of Cornish Boiler and Donkey Engine	Com. of H.M. Works	do.	July 13
Additions to Workhouse	Barnsley Union	G. Moxom	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Road, Bulwell	Nottingham Corp.	A. Brown	July 13
Pipe Sewers (11 miles)	Rushden U.D.C.	Sharman & Archer	July 15
Schools, Bradford-on-Avon	.....	Adye & Adye	do.
Drainage Works, Latimer-road, &c.	Godalming T.C.	S. Welman	do.
Hotel, Dumfries Station, N.B.	Glasgow and S. W. Ry. Co.	*Official*	do.
Road Works, Pencoed	Glamorgan County C.	do.	do.
Drainage Works, Caeran	do.	do.	do.
*Asphalte Paving	Islington Vestry	do.	do.
Granite Road Metal (2,000 tons)	Bedford U.S.A.	do.	July 16
Stabling, West Leigh, Bedford, and Wigan	Wigan Junction Ry. Co.	do.	do.
Shops, New Malden	Mr. Davison	.....	do.
Brick and Pipe Sewers	Leicester Corp.	E. G. Mawbey	July 18
*Branch Post Office, Birmingham	Coms. of H.M. Works	*Official*	July 19
*Sorting Office, Lewisham	do.	do.	do.
*Wrought-iron Fencing	Boro' of Bournemouth	F. W. Lacey	do.
Church, Lundy Isle, Bristol Channel	.....	Groves, Cooper, & Co.	July 20
*Sewerage Works	Newport (I. of W.) U.S.A.	B. Latham	do.
*Relaying Carriageways	Limehouse Bd. of W.	*Official*	July 22
*School Furniture and Fittings	West Ham School Bd.	Newman & Jacques	July 23
Station Buildings, Church, Lancs	Lancs and Yorks Ry. Co.	*Official*	do.
Reconstruction of Bridge, Darwen	do.	do.	do.
*Alterations, &c. to Bath Station	G. W. R. Co.	do.	do.
Earthenware Pipe Sewers (10,300 yards)	Wilmslow U.D.C.	J. Bowden	July 26
Road Metal, Sandal and Walton, Yorks	Sandal Magna U.D.C.	*Official*	July 27
*230 tons Broken Granite	Thame U.D.C.	do.	July 29
Hall and Library, Kirkcaldy, N.B.	.....	Dunn & Findlay	Aug. 1
*Purchase of Two Houses, &c.	West Ham School Bd.	Newman & Jacques	No date
*Boilers, Heating Apparatus, &c.	Cookham Union	E. J. Shrewsbury	do.
Pair Semi-detached Houses, Ripon-road, Harrogate	Mr. Raywood	Geo. Bland	do.
Eight Houses, Strickland-place West, Kendal	Messrs. Metcalf, Carlisle, and others	S. Shaw	do.
Additions to Bleak House, Beast Banks, Kendal	E. W. Thompson	do.	do.
*Schools, Wyke Regis, Dorset	.....	Crickmay & Son	do.
House, Bradford, Yorks	.....	H. & E. Marten	do.
School Extension, Faugh, Carlisle	.....	T. T. Scott	do.
Farm Buildings, &c. Pentreheylin, Ellesmere	.....	E. Bremner Smith	do.
Houses and Shop, Brook-street, Carlisle	.....	G. D. Oliver	do.
Seven Houses, Heeley, Yorks	.....	J. P. Earle	do.
Rebuilding Prince of Wales Inn, Hetton-le-Hole, Leeds	.....	A. D. Kaye	do.
*Temporary Floor to Cover Bath	Islington Baths and Washhouses Commrs.	A. H. Tiltman	do.

PUBLIC APPOINTMENT.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Teacher of Architecture	Leeds School of Art	.....	No date

Those marked with an asterisk (*) are advertised in this Number. ***Competitions,*** *p.* iv. ***Contracts,*** *pp.* iv., vi., viii., *and* xx. ***Public Appointment,*** *p.* xviii.

Byfleet, Surrey, and 26 acres, f., 8,100*l.*—By *W. Weston:* 24 to 32 (even), Tetcott-rd., Chelsea, u.t. 88 yrs., g.r. 34*l.*, 1,400*l.*—By *T. Woods:* Old Court and 6 acres, Cox Green, Maidenhead, f., 1,520*l.*—By *King & Chasemore:* Clay's Farm, West Chiltington, Sussex, 57 a. 0 r. 10 p., f., 725*l.*; Soleland's Farm, 38 a. 0 r. 26 p., f., 800*l.*; Haines Farm, Thakeham, Sussex, 36 a. 3 r. 32 p., f., 870*l.*; Hill Farm, 96 a. 2 r. 25 p., f., 1,100*l.*; "Ingram's Furze," High-rd., Shipley, Sussex, 9 a. 0 r. 30 p., f., 130*l.*; enclosure of land, 9 a. 3 r. 35 p., f., 120*l.*—By *Weatherall & Green:* 2 to 48 (even), Willow-st., Chingford, Essex, f., 4,435*l.*; 1 to 31 (odd), Willow-st., f., 2,430*l.*; 13 to 18, The Parade, f., 3,270*l.*

JUNE 25.—By *Rogers, Chapman, & Thomas:* 1, 4, 15, and 22, Dealtry-rd., Putney, f., r. 355*l.*, 5,500*l.*—By *W. N. Willoughby:* 129, Rosendale-rd., Dulwich, u.t. 88 yrs., g.r. 10*l.* 10s., 660*l.*—By *Debenham, Tewson, & Co.:* two freehold cottages, Main-rd., Bexley, Kent, 200*l.*—By *Rutley, Son, & Vine:* 89, William-st., Regent's-pk., u.t. 27¼ yrs., g.r. 7*l.*, e.r. 48*l.*, 330*l.*—By *S. Walker & Runtz:* Building site, Dorman's-pk.-rd., Lingfield, Surrey, 1 a. 3 r. 1 p., f., 200*l.*; four enclosures of land, Blackberry-rd., 15 a., 2 r., 31 p., f., 850*l.*; a plot of land, Swissland Hill, 6 a. 1 r. 2 p., f., 440*l.*; a building site, St. Margaret's-avenue, 0 a. 1 r. 7 p., f., 65*l.*; a building site, Furzefield Chase, 1 a. 3 r. 12 p., f., 300*l.*; a building site, The Approach, 0 a. 3 r. 3 p., f., 70*l.*; enclosure of building land, Wilderwick-hill, 19 a. 2 r. 35 p., f., 1,020*l.*; a building site, Lake View, 1 a. 3 r. 32 p., f., 300*l.*; "Inglenook," Dorman's Park-rd., and 5 a. 3 r. 5 p., f. (sold privately); a building site, 4 a. 1 r. 33 p., f. (sold privately); a building site, Swissland-hill, 4 a. 2 r. 9 p., f. (sold privately).—By *Bradshaw Brown:* 80 and 82, Crownfield-rd., Stratford, u.t. 83½ yrs., g.r. 9*l.*, 300*l.*

JUNE 26.—By *R. Bond & Son:* "Bishop's Hall," South Weald, Essex, 64 a. 2 r. 37 p., f., 3,000*l.*; three enclosures of land, 27 a. 2 r. 37 p., f., 500*l.*; Thorney Weir Hotel, Iver, &c., Bucks, 12 a. 3 r. 35 p., f., r. 90*l.*, 1,450*l.*; an enclosure of land, Hillingdon, East, 12 a. 2 r., f., 500*l.*; enclosures of land, Iver, 55 a. 2 r. 30 p., f., 3,110*l.*; Iver Lea Farm Homestead, half an acre, f., 420*l.*—By *George Brinsley:* 42 and 44, Royal-rd., Walworth, u.t. 28 yrs., g.r. 10*l.*, r. 56*l.*, 350*l.*; 14 and 16, Clemence-st., Limehouse, u.t. 60 yrs., g.r. 6*l.*, 540*l.*; 11, Buckingham-st., Westminster, f., r. 41*l.* 12s., 800*l.*—By *F. W. Chard & Co.:* 11, The Avenue, Brixton, u.t. 79 yrs., g.r. 7*l.* 7s., e.r. 36*l.*, sold privately.—By *S. B. Clark & Son:* 76, Portland-pl., Marylebone, and stables, u.t. 22 yrs., g.r. 120*l.*, 1,500*l.*—By *E. W. Richardson & Son:* "Parkhurst," Highland-rd., Norwood, u.t. 59½ yrs., g.r. 22*l.* 10s., r. 100*l.*, 725*l.*; 29 and 39, Park-rd., Crouch End, u.t. 86½ yrs., g.r. 25*l.* 4s., r. 120*l.*, 1,220*l.*; The Ely-pl. Schools, New Southgate, and plot of land adjoining, f., 295*l.*—By *J. W. Truman:* 52, Hartfield-rd., Wimbledon, f., r. 34*l.*, 500*l.*; 22 to 25 and 40 to 42, The Broadway, and three sets of stabling, f., r. 530*l.*, 11,990*l.*—By *R. Tidey & Son:* 1, 2, and 3, Beaumont Villas, Hornsey, u.t. 78 yrs., g.r. 14*l.*, r. 86*l.*, 650*l.*; 9 and 11, Oakley-rd., Islington, u.t. 46 yrs., g.r. 10*l.*, r. 89*l.*, 900*l.*; 4, De Beauvoir-rd., De Beauvoir Town, u.t. 38 yrs., g.r. 7*l.*, r. 42*l.*, 330*l.*; 48 to 52 even, Mintern-st., Hoxton, u.t. 32 yrs., g.r. 15*l.* 15s., r. 104*l.*, 765*l.*; 54 and 56, Mintern-st., u.t. 13 yrs., g.r. 7*l.*, r. 32*l.*, 255*l.*; 19, Bookham-st., u.t. 39 yrs., g.r. 5*l.* 5s., r. 36*l.*, 320*l.*; 83, Shaftesbury-st., u.t. 7 yrs., g.r. 3*l.* 10s., r. 30*l.*, 85*l.*; f.g.r. of 5*l.*, Morning-lane, Homerton, reversion in 66 yrs., 115*l.*; f.g.r. of 24*l.*, Gale-st., &c., Bromley-by-Bow, reversion in 60 yrs., 500*l.*; f.g.r. of 27*l.*, Hackney-rd., reversion in 70 yrs., 535*l.*; a timber yard, Austin-st., f., r. 35*l.*, 450*l.*; "The Beehive" beerhouse, Rhodeswell-ter., Stepney, f., r. 30*l.*, 600*l.*; i.g.r. of 59*l.* 1s., St. Paul-st., &c., Hoxton, u.t. 32 yrs., g.r. 39*l.*, 280*l.*—By *J. A. Lumley & Co.:* "Riverbank," Laleham, Middlesex, with stabling, f., 1,500*l.*; a blacksmith's cottage and smithy, f., r. 25*l.*, 500*l.*—By *Rushworth & Stevens:* 80, Fenchurch-st., City of London, f., r. 300*l.*, 7,800*l.*; 64, 66, and 68, Coborn-rd., Bow, u.t. 77 yrs., g.r. 15*l.*, r. 96*l.*, 1,075*l.*; f.g.r. of 35*l.*, Queen's-cres., Reading, reversion in 38 yrs., 1,010*l.*—By *Harman Bros.:* "The Uplands," Crystal Palace Parade, Norwood, u.t. 42 yrs., g.r. 2*l.*, 1,750*l.*; 3, Amhurst Pk., Stamford Hill, u.t. 73 yrs., g.r. 15*l.*, 1,070*l.*; 12, Benthal-rd., Stoke Newington, u.t. 82 yrs., g.r. 8*l.* 10s., r. 45*l.*, 400*l.*—By *Howell, Son, & Bonnin:* 1A, Moreton-ter., Pimlico, u.t. 32 yrs., g.r. 5*l.*, r. 28*l.*, 220*l.*—By *Debenham, Tewson, & Co.* (at Newport): The Bertholey Estate, Newport, Monmouth, containing 982 acres, f., 13,100*l.*

JUNE 27.—By *J. T. Ayton:* 12 and 12A, Grove-rd., Mile End, u.t. 5 yrs., g.r. 6*l.*, r. 36*l.*, 75*l.*; 27, 29, 31, and 33, Nicholas-st., u.t. 35 yrs., g.r. 9*l.* 15s., r. 119*l.*, 1,070*l.*—By *Flood & Sons:* "The Goldney Works," Goldney-rd., Paddington, u.t. 67½ yrs., g.r. 10*l.*, r. 100*l.*, 1,600*l.*—By *R. W. Fuller, Moon, & Fuller:* South Park Farm and Lodge Farm, Bletchingley, Surrey, 556 acres., f., 5,000*l.*—By *Walford & Wilshin:* 10 and 26, Thornsett-rd., Anerley, f., e.r. 90*l.*, 1,260*l.*—"Springfield," Beulah Hill, Norwood, and 16 acres, 6,600*l.*—By *Debenham, Tewson, & Co.:* two freehold cottages, St. Giles', Bucks., Chalfont, 95*l.*; three enclosures of land, Chalfont St. Peter, Bucks., 2 a. 3 r. 27 p., f., 95*l.*—By *Dyer, Son, & Hilton;* 67, Burnt Ash-hill, Lee, u.t. 68 yrs., g.r. 10*l.* 10s., e.r. 75*l.*, 800*l.*; "Weston House," Eltham Green, Eltham, u.t. 966 yrs., g.r. 14*l.* 10s., 655*l.*; "Ivy Dene," The Avenue, Grove-pk., f., r. 105*l.*, 1,000*l.*—By *C. C. & T. Moore:* 58, Salmon's-lane, Limehouse, u.t. 54½ yrs., g.r. 10*l.*, r. 39*l.* 10s., 150*l.*; 3, Cordelia-st., Mile End, u.t. 51 yrs., g.r. 3*l.* 13s., 130*l.*; 9 and 10, Union-st., Poplar, and 18 and 19 Providence-pl., u.t. 69 yrs., g.r. 15*l.* 15s., 155*l.*; 2 and 4, Longnor-rd., Mile End, u.t. 70 yrs., g.r. 7*l.*, r. 71*l.* 10s., 650*l.*: 3 and 4, Crozier-terr., Homerton, u.t. 67 yrs., g.r. 5*l.*, 210*l.*; 1 and 2, Rose-cottages, Woodford, u.t. 998 yrs., g.r. 5*l.*, 170*l.*; 6, 7, and 8, West Grove-villas, f., 425*l.*—By *Newbon & Co.:* 17, 19, 21, and 23, Lady Somerset-rd., Kentish Town, u.t. 67¾ yrs., g.r. 24*l.* 19s., 1,075*l.*; 134, Junction-rd., Holloway, u.t. 56 yrs., g.r. 10*l.*, r. 50*l.*, 440*l.*; 17 and 19, Rupert-rd., u.t. 70 yrs., g.r. 9*l.*, 290*l.*; 40, King's-rd., Stoke Newington, u.t. 64½ yrs., g.r. 9*l.*, e.r. 48*l.*, 380*l.*; 19, Regency-terr., Willesden, u.t. 89 yrs., g.r. 10*l.*, r. 25*l.*, 200*l.*; 18, Bolingbroke-grove, Wandsworth, u.t. 86 yrs., g.r. 38*l.* 12s. 6d., e.r. 130*l.*, 1,200*l.*; "West Lodge," Elmer's End-rd., Anerley, u.t. 58 yrs., g.r. 4*l.* 12s., r. 28*l.*, 220*l.*; 19, Canonbury-sq., Canonbury, u.t. 23¼ yrs., g.r. 10*l.*, e.r. 60*l.*, 280*l.*; No. 409, City-rd., f., r. 100*l.*, 1,700*l.*; 24, Arundel-sq., Barnsbury, f., e.r. 80*l.*, 560*l.*; 4, Victoria-rd., Finsbury Pk., u.t. 78 yrs., g.r. 7*l.* 7s., e.r. 46*l.*, 330*l.*; 24, William-st., Islington, u.t. 50½ yrs., g.r. 5*l.*, r. 34*l.*, 200*l.*; 2, De Beauvoir-cres., De Beauvoir Town, u.t. 34 yrs., g.r. 1*l.*, 250*l.*; 105, Central-st., St. Luke's, u.t. 9 yrs., g.r. 5*l.*, 50*l.*—By *Stimson & Sons:* 115 to 125 odd, Commercial-rd., Peckham, f., r. 150*l.*, 1,790*l.*; f.g.r. of 10*l.*, Commercial-rd., reversion in 71½ yrs., 260*l.*; 351, Kennington-rd., Kennington, u.t. 36 yrs., g.r. 11*l.*, r. 45*l.*, 265*l.*; 1 to 4, Smart's-ter., Lambeth, u.t. 17¾ yrs., g.r. 20*l.*, 800*l.*; 151, Grange-rd., Bermondsey, u.t. 22 yrs., g.r. 5*l.*, r. 32*l.*, 150*l.*; 81 and 83, Newington Butts, Newington, u.t. 67¼ yrs., g.r. 52*l.*, 700*l.*; 23, 24, and 25, Evelina-rd., Penge, u.t. 69 yrs., g.r. 10*l.*, 200*l.*; 52 and 54, Commercial-rd., Peckham, f., r. 52*l.*, 640*l.*; 23, 27, and 31, Lyham-rd., Brixton, u.t. 87¾ yrs., g.r. 24*l.*, r. 90*l.*, 610*l.*—By *Farebrother, Ellis, Clark, & Co.:* 24, Great New-st., City of London, u.t. 62 yrs., g.r. 340*l.*, r. 750*l.*, 4,450*l.*; 28, Parliament-st., Westminster, f., r. 385*l.*, 9,100*l.*; "Crown Point," Castle Bar-rd., Ealing, with stabling and 2 a. 1 r. 3 p., f. 4,000*l.*; three plots of building land, Castle Bar-rd., f. 1,640*l.*; 13 to 16, The Broadway, u.t. 9 yrs., g.r. 120*l.*, r. 317*l.*, 1,030*l.*; 77, Bishop's-rd., Paddington, u.t. 43 yrs., g.r. 8*l.*, r. 200*l.*, 2,900*l.*; 180, Queen's-rd., u.t. 43 yrs., g.r. 7*l.*, r. 121*l.* 5s., 1,530*l.*; 141 and 143, Stanstead-rd., Forest-hill, f., r. 95*l.*, 1,660*l.*; 147, Stanstead-rd., f., r. 65*l.*, 1,220*l.*; 1 and 3, Wastdale-rd., f. 1,000*l.*; 35, 37, 39 and 41, Park-rd., u.t. 66 yrs., g.r. 4*l.*, 1,200*l.*; Park-rd., i.g.r. of 41*l.* 13s. 4d., u.t. 66 yrs., g.r. nil., 735*l.*

JUNE 28.—By *Eldridge, Hatcher, & Jackson:* 18 and 20, Walcot-sq., Lambeth, u.t. 12 yrs., g.r. 6*l.* 6s., r. 67*l.*, 200*l.*—By *Hunter & Hunter:* I.g.r. of 70*l.*, Bishop's-rd., Paddington, u.t. 46¼ yrs., g.r. nil, 1,355*l.*—By *Ellis & Son:* Building land, the letting of two plots of, Sunray-av., Denmark Hill, on 80 years' lease, at per annum, 50*l.*—By *Furber, Price, & Furber:* The Royal Oak Hotel, St. James'-st., Brighton, and the Old Brewery adjoining, 4,060*l.*; 3, 5, 7, and 9, St. Leonard's-rd., Bromley-by-Bow, f., r. 30*l.*, 850*l.*; "The Hollies," Hornchurch, Essex, f., r. 35*l.*, 500*l.*—By *Randall, Beard, & Baker:* 73, Leicester-rd., Finchley, u.t. 89 yrs., g.r. 5*l.* 10s., r. 30*l.*, 275*l.*

[*Contractions used in these Lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	8/0/0 0/0/0
Teak, E.I.	load	10/0/0 16/0/0
Sequoia, U.S. ft. cu		1/10 2/2
Ash, Canada load		2/15/0 4/0/0
Birch, do.		2/5/0 3/10/0
Elm, do.		3/10/0 4/15/0
Fir, Dantsic, &c.		1/15/0 3/10/0
Oak, do.		2/15/0 4/15/0
Canada		6/0/0 7/10/0
Pine, Canada red		0/0/0 0/0/0
Do. Yellow		2/15/0 5/0/0
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg		5/0/0 6/10/0
Wainscot, Riga, &c., log		3/0/0 5/5/0
Odessa, crown		3/0/0 5/5/0
Deals, Finland 2nd & 1st std	100	7/0/0 8/10/0
Do. 4th & 3rd		7/0/0 8/0/0
Do. Riga		7/0/0 8/0/0
St. Petersburg, 1st yellow		9/10/0 12/0/0
Do. 2nd yellow		7/10/0 9/0/0
Do. white		8/0/0 9/10/0
Swedish		7/0/0 15/10/0
White Sea		7/10/0 15/0/0
Canada, Pine 1st		22/0/0 24/0/0
Do. do. 2nd		16/10/0 17/10/0
Do. do. 3rd, &c.		8/5/0 10/10/0
Do. Spruce, 1st		9/0/0 10/10/0
Do. do. 3rd and 2nd		6/10/0 7/10/0
New Brunswick		6/0/0 7/0/0
Battens, all kinds		5/0/0 21/0/0
Flooring boards, sq., 1 in. prep. 1st		0/9/6 0/14/6
Do. 2nd		0/6/6 0/11/6
Other qualities		0/4/6 0/7/6
Cedar, Cuba	ft.	/3 /4
Honduras, &c.		/3 /4½
Mahogany, Cuba		/5½ /6
St. Domingo, cargo av.		/3½ 1/0
Mexican do. do.		/3 /4
Tobasco do. do.		/3½ /6
Honduras do.		/3½ /5½
Box, Turkey	ton	4/0/0 15/0/0
Rose, Rio		7/0/0 16/0/0
Bahia		6/0/0 15/0/0
Satin, St. Domingo		0/0/5 0/1/0

TIMBER (*continued*).		
Satin, Porto Rico	0/0/6	0/1/6
Walnut, Italian	0/0/3½	0/0/7
METALS.		
Iron—Pig, in Scotland	ton	2/4/2 0/0/0
Bar, Welsh, in London		5/12/6 5/15/0
Do. do. at works in Wales		5/2/6 5/5/0
Do. Staffordshire, in London		6/0/0 6/10/0
COPPER—British cake and ingot		45/0/0 45/5/0
Best selected		46/0/0 46/5/0
Sheets, strong		52/0/0 0/0/0
Chili bars		42/5/0 42/10/0
YELLOW M'TAL	lb	0/0/4½ 0/0/4⅝
LEAD—Pig, Spanish	ton	10/10/0 0/0/0
English com. brands		10/8/9 10/11/3
Sheet, English, 6 lbs. per sq. ft. and upwards		11/10/0 0/0/0
Pipe		12/0/0 0/0/0
ZINC—English sheet	ton	18/10/0 0/0/0
Vieille Montagne		19/10/0 0/0/0
TIN—Straits		62/17/6 63/7/6
Australian		62/12/6 64/2/6
English Ingots		65/10/0 66/0/0
Banca		63/10/0 64/0/0
Billiton		62/15/0 63/0/0
OILS.		
Linseed	ton	21/5/0 21/12/6
Cocoanut, Cochin		24/0/0 24/10/0
Do. Ceylon		22/10/0 0/0/0
Palm, Lagos		22/10/0 0/0/0
Rapeseed, English pale		22/10/0 0/0/0
Do. brown		21/0/0 0/0/0
Cottonseed ref.		17/10/0 18/0/0
Oleine		20/10/0 21/10/0
Lubricating, U.S.		5/9/0 8/6/0
Do. black		4/6/0 6/6/0
TAR—Stockholm	barrel	1/0/0 1/0/6
Archangel		0/15/6 0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.*]

AMERSHAM (Bucks.).—For the erection of villa residence, near Amersham Station, for Mr. J. Sladen. Mr. Guest Luckett, architect, Aylesbury :—

H. H. Sherwin	£920 0	S. Grist	£798 18
G. Darlington	900 0	Wallis & Sons	795 0
C. W. Read	869 0	Grimsdale	786 0
E. J. Brown	845 0	Siarey	722 0

AYLESBURY.—For the erection of a cottage at Stone, for Mr. Thos. Monk. Mr. Guest Luckett, architect, Granville-street, Aylesbury. Quantities by the architect :—

Wallis & Sons	£227 0 0	Senior & Clarke, Wendover (accepted)	£186 13 8
Grimsdale	217 0 0		
Siarey	150 0 0		

BALROTHERY (Ireland).—For sinking a well, and lining same, Turvey, for the Union Guardians :—
L. F. Branigan, 18, Shop-street, Drogheda—

£	s.	d.	
0	4	0	per foot for first 5 ft. through clay, and
0	2	6	additional for every subsequent 5 ft.
0	18	0	per foot for first 5 ft. through rock, and
0	3	0	additional for each subsequent 5 ft.
0	7	9	per foot for stone lining.
14	10	0	for supplying and erecting cast-iron pump, and covering in well-hole.

BIRMINGHAM.—For the construction of sewer, &c. Richmond Park-road, Solihull, for the Rural District Council. Mr. A. E. Currall, Surveyor, The Square, Solihull :—

Geo. Trentham	£1,133 0 0	J. Cooper	£980 0 0
J. Biggs	1,060 0 0	Jones & Fitzmaurice, Birmingham*	951 9 9
G. Law	1,015 0 0		
Currall & Lewis	998 10 0	* Accepted.	

BLAENGWYNFI (Glam.).—For the erection of twenty-five cottages, for the Abergwynfi Building Club. Messrs. Griffiths & Jones, architects, Pontypridd and Ton-y-pandy :—
D. C. Jones & Co. £6,250
Rowlands & Lloyd, Ton-y-pandy (accepted) 4,125
[Several other tenders sent in.]

BLAENAVON (Mon.).—For the supply of 4,180 yards cast-iron socket-pipes, for the Urban District Council. Mr. T. Dyne Steel, C.E., Skinner-street, Newport :—

	Per ton.		Per ton.
J. & S. Roberts	£4 5 0	to	£4 12 6*
C. & H. Peel	4 5 0	,,	4 12 6
Isca Foundry Co.	4 5 0	,,	4 7 6†
Executors of Chas. Jordan	4 7 6	,,	4 8 4
Stanton Ironworks Co., Ltd.	4 9 3	,,	4 11 6
R. W. Brett & Co.	4 11 9	,,	4 14 0
Cochrane & Co.	4 10 0	,,	4 17 6
Thos. Allan & Sons	4 11 6	,,	4 19 0
Thos. Spittle, Ltd.	4 6 6‡		—
H. J. Skelton & Co.	4 6 0	,,	4 13 6

* 2½ per cent. discount. † Extra weight three larger sizes. ‡ All sizes.

BRYNAMMAN (Glam.).—For the erection of school buildings, &c., for the Llanguicke School Board. Mr. Thomas Bartholomew, architect, Brynamman :—

John Williams	£2,080	David Rees	£1,588
Evan Thomas	2,056	John Morris, Brynamman, Carmarthenshire*	1,543
Williams & Morgan	1,850		

* Accepted.

BURGHFIELD (Berks.).—For studio at Burghfield, for Mr. Jas. Dewe. Mr. J. S. Dodd, architect, Reading :—
Goodchild £237

CAERPHILLY.—For the construction of sewer, &c., in St. Martin's-road, Caerphilly, for the Urban District Council. Mr. A. O. Harpur, Engineer and Surveyor :—

T. W. Davies	£267 17 0	Meshach Williams	£216 8 0
Barnes, Chaplin, & Co.	239 10 11	William Morgan	197 0 11
Eli Rees	231 18 6	Thos. Harries	196 3 9
H. C. Parfitt	231 10 0	Wm. Phillips	194 16 6
Scott & Williams	227 10 0	T. Street	194 3 3
Jones & Thomas	224 17 3	E. H. Page	189 6 9

HARWICH.—For the erection of schools, cookery kitchen, boundary walls, playgrounds, &c., and closets, &c., on the main road for the Harwich School Board, Essex. Mr. J. W. Start, F.S.I., architect, Colchester, Clacton-on-Sea, and Harwich. Quantities by the architect.

	Schools.	Latrines and Drainage.	Playgrounds, Boundary Walls, &c.	Extra Foundations.	TOTAL.	Stone Dressing.
	£ s. d.	£ s.	£ s. d.	£ s. d.	£ s. d.	£
Wawman	4448 0 0	46 0	1390 0 0	950 0 0	7194 0 0	175
G. Dobson	4200 0 0	350 0	1365 0 0	965 0 0	6880 0 0	190
H. Gladwell	4469 10 0	317 5	1334 13 3	685 3 0	6786 11 3	99
Smith & Beaumont	4040 17 0	411 12	1398 17 0	893 10 0	6744 16 0	135
J. Moran & Son	4010 18 4	401 4	1388 6 0	889 11 8	6690 0 0	185
E. West	4086 0 0	340 0	1250 0 0	1000 0 0	6676 0 0	272
Everett & Son	4040 0 0	330 0	1300 0 0	920 0 0	6590 0 0	180
Girling & Coe	3775 0 0	359 0	1275 0 0	1060 0 0	6469 0 0	210
F. Dupont	4140 0 0	310 0	1245 0 0	740 0 0	6435 0 0	125
J. Brown	4046 0 0	361 0	1220 0 0	793 0 0	6420 0 0	135
S. Parmenter	3964 0 0	350 0	1217 0 0	788 0 0	6319 0 0	139
E. Saunders	3647 19 0	276 0	1262 0 0	786 7 0	5972 6 0	272

WEST HAM.—For pumping machinery, new outfall works, Abbey Mills, for the County Borough of West Ham. Mr. Lewis Angell, M.Inst.C.E., Engineer :—

	Beam Engines.	Centrifugal Pumps.	Alterations, Centrifugal Pumps.	Boilers.	Alterations to two Boilers.	Economisers.	Steam Pipes, &c.	Travelling Crane.	TOTAL.
	£	£	£	£	£	£	£	£	£
Stewart & Co.	9950	4300	656	2540†	520†	1140	550	720	20376
Lilleshall & Co.	10550*	4200	560	£39 50		850	320*	726*	21156
Easton, Anderson, & Co.	11127	3810	587	4266	941	666	492	473	22362
B. Goodfellow	16250	3800	550	3700	575	670	650	400	26595
J. Cochrane	18000	4360*	550	2950	740	670	750	900	28920
Yates & Thom	16350	—	—	3445	694	738	945	600	—
Tangyes, Limited	—	3700	520	3550	625	—	385	295	—
Bever & Dorling	19600	—	—	—	—	—	—	—	—
Fraser & Son	—	—	—	2943	764	730	488	—	—
Gwynne & Co.	—	4820	560	—	—	—	—	—	—
E. Danks	—	—	—	3500	1250	725	650	—	—
J. Thompson	—	—	—	3170	600	775	—	—	—
D. Adamson & Co.	—	—	—	3285	850	850	—	—	—
Tinkers, Limited	—	—	—	3750	590	760	—	—	—
Spurr, Inman, & Co.	—	—	—	2005*‡	440	648*	—	—	—
Penman & Co.	—	—	—	2832†	360†	—	—	—	—
Tinker, Shenton & Co.	—	—	—	3580	—	—	—	—	—
Fraser & Fraser	—	—	—	3333	—	—	—	—	—
Lawrence & Co.	—	5100	—	—	—	—	—	—	—
Gimsons, Limited	—	—	—	—	—	—	—	600	—

NOTE.—The above tenders are as originally submitted.
* Accepted. † Exclusive of brickwork. ‡ Six pairs stokers, elevator, four converters, &c., £1,370.

CHEPSTOW (Mon.).—For the erection of school buildings, for the School Board. Mr. W. Evill, architect, Chepstow. Quantities by architect :—

John Phillips	£3,175 12	Hatherley & Carr	£2,858 0
Price & Son	3,124 0	W. Drew & Son	2,850 0
W. C. Whalley	3,025 0	W. Cuvlin & Son	2,783 0
W. Bowers	2,996 0	G. Wilkins	2,680 0
A. King & Son	2,994 0	John Linton, Newport, Mon.*	2,545 0
J. D. Williams	2,980 0	J. Jenkins	2,490 0
W. Church	2,866 0		

* Accepted subject to approval of Educational Department.
[Architect's estimate, £2,733.]

COLCHESTER.—For proposed shop and premises at 4, Wyre-street, Colchester, for Mr. S. Balls :—

Near	£1,130	R. Beaumont	£816
E. West	867	W. Chambers, Colchester*	759
F. Dupont	825		

* Accepted.

EAST RETFORD (Notts.).—For the erection of public baths for the Council. Mr. J. D. Kennedy, Borough Surveyor, Retford. Quantities by Mr. F. Cartwright, 25, Figtree-lane, Sheffield :—

Wm. Ives & Co.	£2,693 13 10	J. F. Price	£2,250 0 0
Thos. Astling	2,574 14 6	J. H. Vickers	2,239 0 0
Geo. Webster	2,440 0 0	Wm. Johnson	2,217 0 0
Chas. Baines	2,419 10 6	F. Pattinson	2,150 0 0
Wm. Nicholson & Sons	2,341 0 0	John Wilson, Retford (accepted)	2,120 0 0

[All exclusive of engineering arrangements.]

ELLESMERE.—Accepted for the erection of new dwelling-house in Brownlow-road, for Mr. John Hood. Mr. S. G. N. Mann, architect :—
G. Kesterton & Son £300

HALIFAX.—For enclosing the new burial ground adjoining the Mount Tabor Wesleyan Chapel, for the Trustees. Mr. Arthur G. Dalzell, architect and surveyor, Albany Chambers, 15, Commercial-street, Halifax :—

Foster Bros.	£127 10	Hy. Smithies, Warley*	£121 10

* Accepted.

HURST (Berks.).—For new shop-front, &c., post-office, Hurst, Twyford, for Mr. Green. Mr. J. S. Dodd, architect, Reading :—

Fitt	£187	Lewis	£159

LONDON.—For alterations to "The Warrior" public-house, Coldharbour-lane, S.E., for Mr. John E. Brown. Mr. W. Mepps, architect :—

Turtle & Appleton	£1,580 0	Maxwell Bros.	£1,027 0
J. O. Richardson	1,119 0	Drew & Cadman*	988 10
Peacock Bros.	1,065 0	Powditch & Co.	930 0

* Accepted.

LONDON. — For paving Ennismore Gardens Mews, North Knightsbridge, for the Westminster Vestry. Mr. G. R. W. Wheeler, Surveyor, Town Hall, Caxton-street, Westminster, S.W. :—

Robertson & Grant	£1,589 0 0	W. Gibbs	£976 5 0
W. Griffiths	1,086 18 5	J. Mowlem & Co.*	926 0 0
Improved Wood Pavement Co., Ltd.	1,036 0 0	Acme Wood Paving Co., Ltd.†	
Nowell & Robson	1,015 0 0		

* Accepted. † Informal.

LONDON.—For pulling down old shop, No. 74, Broadway, Stratford, E., and erecting new premises, for J. R. Roberts' Stores, Ltd. Mr. J. Kingwell Cole, architect, 17, Hart-street, Bloomsbury-square, W.C. :—

		Extra for Lead Flats.	Extra for Teak Stairs.
A. Reed & Sons	£2,998	£71	£10
C. H. & A. Bywaters	2,973	69	9
Harris & Wardrop	2,893	65	8
Bishop & Webb	2,855	70	10
H. Wall & Co.	2,830	68	9
E. Good	2,707	Not given.	
T. Osborn & Sons, Lower Thames-street, E.C.*	2,750	Inclusive of extras.	

* Accepted.

LONDON.—For building restaurant and stables, 47 and 49, Millbank-street, Westminster, S.W., for Messrs. Slaters, Limited. Mr. Chas. R. Guy Hall, architect, 6, Charles-street, Kensington Court :—

Oborn & Day	£2,932	Walter Nash	£2,660
B. Cook & Co.	2,900	John Barker & Co.	2,479
Buckeridge Bros.	2,667	Leslie & Co. (accepted)	2,379

LONDON.—For building a new factory, Grove-street, Deptford, for Messrs. A. G. Scott & Co., Ltd. Messrs. Tolley & Son, architects, 20, Budge-row, Cannon-street, E.C. Quantities by Mr. F. H. A. Hardcastle, 5, Old Queen-street, Westminster, S.W. :—

	Scheme 1.	Scheme 2.	Scheme 3.
	£ s.	£	£ s.
Waddington & Co.	1,725 0	3.493	2,335 10
Gould & Brand	1,690 0	3.448	2,256 0
Bulled & Co.	1,690 0	3.420	2,208 0
H. Leney	1,655 10	3.347	2,214 0
J. W. Falkner	1,633 0	3.316	2,196 0
J. Carmichael	1,615 0	3.290	2,162 0
Munday & Son	1,612 0	3.290	2,171 0

LONDON.—Accepted for building "The New Inn," Westminster Bridge-road, for Mr. F. Davy. Messrs. Treacher, Son, & Fisher, architects :—
Edwards & Medway £4,456

LONDON.—Accepted for building "The Black Horse," Brixton-road, S.W., for Messrs. F. & W. Collingham. Mr. Ernest R. Barrow, architect :—
Edwards & Medway £3,377

LONDON.—For alterations, &c., at 212, Piccadilly, S.W., for Messrs. Slaters, Ltd. Mr. Chas. R. Guy Hall, architect, 6, Charles-street, Kensington Court :—

W. Johnson & Co., Ltd.	£5,970	John Barker & Co.*	£5,119
Leslie & Co., Ltd.	5,707		

* Accepted.

LONDON.—For carriage factory at 235, Hammersmith-road, W., for Messrs. Wm. Cole & Sons. Mr. Chas. R. Guy Hall, architect :—

Stimpson & Co.	£4,300	Leslie & Co.	£3,869
Higgs & Hill	4,200	Patman & Fotheringham	3.773
Wm. Johnson & Co.	3,995	B. E. Nightingale	3.545
Holland & Hannen	3,920		

LONDON.—Accepted for alterations at the "Harry Tavern," Brunswick-road, Bromley, Messrs. Chester, Foulsham, & Riches, architects :—
W. Ellis & Co. £814

LONDON.—Accepted for alterations and additions, "Carpenter's Arms," Cambridge-road, Bromley. Mr. Edward Brown, architect :—
W. Ellis & Co. £612

LONDON.—Accepted for alterations to premises, Cambridge-road, for Mr. Pearson :—
W. Ellis & Co. £125

LONDON.—For carrying out various structural alterations and improvements to the Clifton-road School, New Cross, for the School Board for London. Mr. T. J. Bailey, Architect :—
Mid-Kent Building and Contracting Works, Ltd., Beckenham* £2,755
* Recommended for acceptance by the Works Committee.

LONDON.—For the provision and erection of three temporary iron buildings, Kennington-road, for the School Board for London :—

M. T. Shaw & Co.	£1,892 10 0	Croggon & Co., Ltd.	£1,375 0 0
D. Charteris	1,665 0 0	E. C. & J. Keay, Ltd.	1,358 11 0
I. Dixon & Co.	1,506 12 0	W. Harbrow	1,321 0 0
F. Morton & Co., Ltd.	1,489 17 6	Hill & Smith, Brierly, Staffs.*	1,300 0 0
J. Lysaght, Ltd.	1,479 0 0		
T. Cruwys	1,400 0 0		

* Accepted.

LONDON.—For extending the system of low-pressure hot-water apparatus in the Yerbury-road School, Holloway, to the new portion of the school, for the School Board for London. Mr. T. J. Bailey, Architect :—

Duffield & Co.	£223 0	Comyn Ching & Co.	£128 10
T. Potter & Sons, Ltd.	170 0	J. F. Clarke & Sons	104 10
J. & F. May	130 0	J. C. & J. S. Ellis, Ltd.	104 10
Wenham & Waters, Ltd.	130 0	Vaughan & Brown, Ltd.*	97 9

* Recommended for acceptance by the Works Committee.

LONDON.—For constructing new offices for the boys' and girls' departments of the Eltringham-street School, Wandsworth, and for relaying the soil drains and a portion of the surface-water drains, providing ventilation, &c., for the School Board for London. Mr. T. J. Bailey, Architect:—

F. G. Minter	£1,890 0	S. Polden	£1 524 15
W. Hammond	1,738 0	W. Akers & Co.	1,483 0
Lathey Bros.	1,698 0	B. E. Nightingale*	1,136 0
J. Marsland	1,585 0		

* Accepted by the Works Committee.

NELSON.—For extension of 3-in. water main at Nelson, for the Caerphilly Urban District Council. Mr. A. O. Harper, Engineer and Surveyor:—

Jones & Thomas	£183 10 0	T. Street	£146 7 6
T. W. Davies	170 5 0	Scott & Williams	142 5 0
Barnes, Chaplin, & Co.	161 11 0	Thos. Harries	140 0 0
C. S. Brewer	150 19 0	Meshach Williams, Caerphilly*	140 2 2
Wm. Phillips	149 13 6		

* Accepted.

OSWALDTWISTLE (Lancs.).—Accepted for the erection of premises, for the Liberal Club, Rhyddings-street. Messrs. Haywood & Harrison, architects, Accrington. Quantities by the architects:—

Bricklaying and Masonry—Jas. H. Critchley, H. Accrington	£1,080 0 0
For Concrete and Front Boundary-wall.—Jas. H. Critchley	85 14 6
Carpentry and Joinery.—George Walsh, Oswaldtwistle	797 3 7
Plumbing.—John Sudall, Oswaldtwistle	281 0 0
Painting.—John Sudall, Oswaldtwistle	56 0 0
Slating.—Thos. Farnworth, Oswaldtwistle	95 13 0
Plastering.—George Eastwood, Accrington	71 13 0
Ironfounding.—J. W. Bridge, Accrington	74 15 0
Heating.—Approx. estimate	55 0 0
	£2,566 19 1

PANGBOURNE.—For alterations to post-office, Pangbourne, for Mr. Clifford. Mr. J. S. Dodd, architect, Reading:—

Bottrill & Son	£390 0	Warner	£349 0
Boxall & Son	367 0	Goodall (accepted)	321 19

PAIGNTON.—For erecting and completing Paignton Wesleyan Chapel in Palace-avenue, for the Trustees. Mr. Walter George Couldrey, architect, of Paignton. Quantities by Mr. Vincent Cattermole Brown, of Paignton:—

Webber & Maunder	£2,270 15 0	M. Bridgman	£2,011 14 6
H. Webber & Son	2,229 10 0	Bovey	1,995 0 0
C. & R. E. Drew	2,183 0 0	Blatchford	1,991 12 0
H. P. Rabbich	2,126 0 0	Lamacroft, Dawlish*	1,893 10 0
R. Yeo	2,014 0 0		

* Accepted.

PENRHIWFER (Glam.).—For the erection of 20 or more houses, for the Pride of Glamorgan Building Club. Messrs. Griffiths & Jones, architects, Town Hall Chambers, Ton-y-pandy, and Pontypridd:—

Enock Bros.	£3,110	Thomas Morgans, Pen-y-graig*	£2,975
Jno. James	3,065		
D. Evans & Sons	3,028		

* Accepted.

RAINHILL (Lancs.).—For additions to No. 5 ward at the county asylum, for the Lancashire Asylums Board. Messrs. Grayson & Ould, architects, 31, James-street, Liverpool:—

Hughes & Stirling	£2,997 0	Haigh & Co.	£2 462 0
Peter Tyson	2 923 0	Joseph Ellison	2 462 0
R. Neill & Sons	2,689 0	W. Wearing & Sons	2,439 10
W. Tomkinson & Sons	2,664 0	J. Paterson & Sons	2,437 0
Brown & Backhouse	2,575 0	J. Rothwell & Sons, St. Helen's (accepted)	2,313 0
W. Thornton & Sons	2 568 0		
John Shaw	2,500 0		

REDWICK (Mon.).—For the construction of a sea-wall, 475 ft. in length. Mr. Togarmah Rees, C.E., Corn Exchange-chambers, Newport, Mon.:—

T. Goldsworthy	£3.017 9 0	Gardner & Happerfield	£1,819 13 0
J. Lawson	2,393 1 0	T. Louis Davies	1,779 14 0
W. Payne	2,424 9 0	A. E. Parfitt, Newport*	1,729 0 0
Jas. Meyrick	2,187 12 0		
Geo Williams	1.943 3 6		
Dixon Bros.	1,862 16 0		

* Accepted.

ROTHWELL.—For the supply of road materials, for the Urban District Council. Mr. W. T. Pearson, Surveyor, Rothwell, Northants:—

Granite.

	At Desborough Station. Per ton.		At Rushton Station. Per ton.	
	s. d.	s. d.	s. d.	s. d.
Ellis & Everard, Leicester*	8 9	7 9	8 9	7 9
J. Ellis & Sons	8 6	7 8	8 8	8 0
Mountsorrel Granite Co.	8 6	9 6	9 3	10 3
Cliff Hill Granite Co.	8 3	6 3	9 0	7 0
Croft Granite Co.	8 0	8 2	8 1	8 3
(Griff) E. Van Praagh & Co.	8 0	7 9	8 0	7 9
Narborough and Enderby Granite Co.	7 11	8 2	8 9	9 0
Groby Granite Co.	7 9	5 6	7 10	5 7
Enderby and Stoney Stanton Granite Company	7 9	7 9	7 10	7 10
Rawson & Rawson	7 7	7 9	8 5	8 7

Slag.

Kettering Iron and Coal Co.	4 6	—	4 4	—

* Accepted.

ST. HELEN'S (Lancs.).—For the erection of business premises, for the St. Helen's Co-operative Society, Ltd. Mr. F. S. Biram, architect, Windle Chambers, Hardshaw-street, St. Helen's. Quantities by architect:—

T. Rotheram	£14,340 0 0	R. Neill & Sons	£13.424 0 0
P. Tickle	14.242 5 10	J. Patterson & Son.	13,178 0 0
Frank Clarke	13,770 0 0	G. Waiyborn & Son	12,968 10 6
J. Shaw	13,738 0 0	Whittaker & Woods, Shaw-street, St. Helen's (accepted)	12,958 10 0
Wm. Molyneux	13,550 0 0		
J. Walker & Son	13,460 0 0		

SHEFFIELD.—For the supply of cast-iron water-pipes, for the Wortley Rural District Council. Mr. G. E. Beaumont, Surveyor, Workhouse, Grenoside, Sheffield:—

Contract No. 1.

		Per ton.
Newton, Chambers, & Co., Thorncliffe, Sheffield*	£4 5	0 pipes.
" " "	7 10	0 specials.
Stanton Iron Co., Stanton, Nottingham	4 2	6 pipes.
" " "	8 10	0 specials.

Contract No. 2.—Pipelaying, Fencing, &c.

Wm. Bell & Son	£1,645	Jno. E. Nadin	£1,218
Jas. Trippett	1,530	Geo. Hall, Heeley, Sheffield†	1,181

* Accepted, 190 tons. † Accepted.

SWINTON (Yorks.).—Accepted for the construction of sewers, &c., for the Urban District Council. Mr. R. Fowler, Surveyor, Swinton:—

George Eyre, Sheffield £116 6 4½

TON-Y-PANDY.—For building additions to the Royal Hotel, for Mr. P. Thomas. Messrs. Griffith & Jones, architects, Ton-y-pandy and Pontypridd:—

Charles Bros.	£574 0 0
Thos. Old, Ton-y-pandy (accepted)	565 6

TWICKENHAM.—For sundry works to river embankment-wal of Paulett Lodge, Twickenham, for Mr. P. B. Burgoyne. Mr. Walter J. Ebbetts, architect, Savoy House, 115, Strand, W.C.:—

Foord & Son	£690	T. J. Messam	£395

WELLINGBOROUGH.—For the construction of sewerage works, Earls Barton, for the Rural District Council. Messrs. Sharman & Archer, architects, Market-square, Wellingborough:—

R. Marriott	£1,696 0 0	F. Johnson & Son	£1 523 0 0
S. Hipwell	1,693 0 0	G. Henson	1,468 0 0
G. Young	1,644 15 2	W. T. Hall	1,427 0 0
W. Smart	1,569 17 6	Brown & Son	1,424 0 0
W. G. Willmott	1,526 10 0	William Goodman	1,300 0 0

WESCOTT (Bucks.).—For the erection of an assembly hall, for Mr. J. E. Taylor. Mr Guest Luckett, architect, Aylesbury:—

Mr. Siarey—Accepted at the Architects' Compendium Schedule for 1895.

[No competition.]

WOODFORD GREEN.—For sanitary works at Woodford Green, Essex, for Lady M. Charteris. Mr. J. D. Hooper, surveyor, Woodford. Quantities by the surveyor:—

H. Knight & Son	£229 0 0	W. C. French	£213 8 4

WOODHALL SPA (Lincs.).—For the erection of a cottage on the sewage farm, for the Horncastle Rural District Council. Mr. Herbert Walker, C. E., Nottingham. Quantities by architect:—

William Jackson	£303	Oliver Cromwell, Woodhall Spa*	£231
Walter & Hensman	275		

* Accepted.

TO CORRESPONDENTS.

L. & H. (too late; next week).

We are compelled to decline pointing out books and giving addresses.

NOTE.—**The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.**

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

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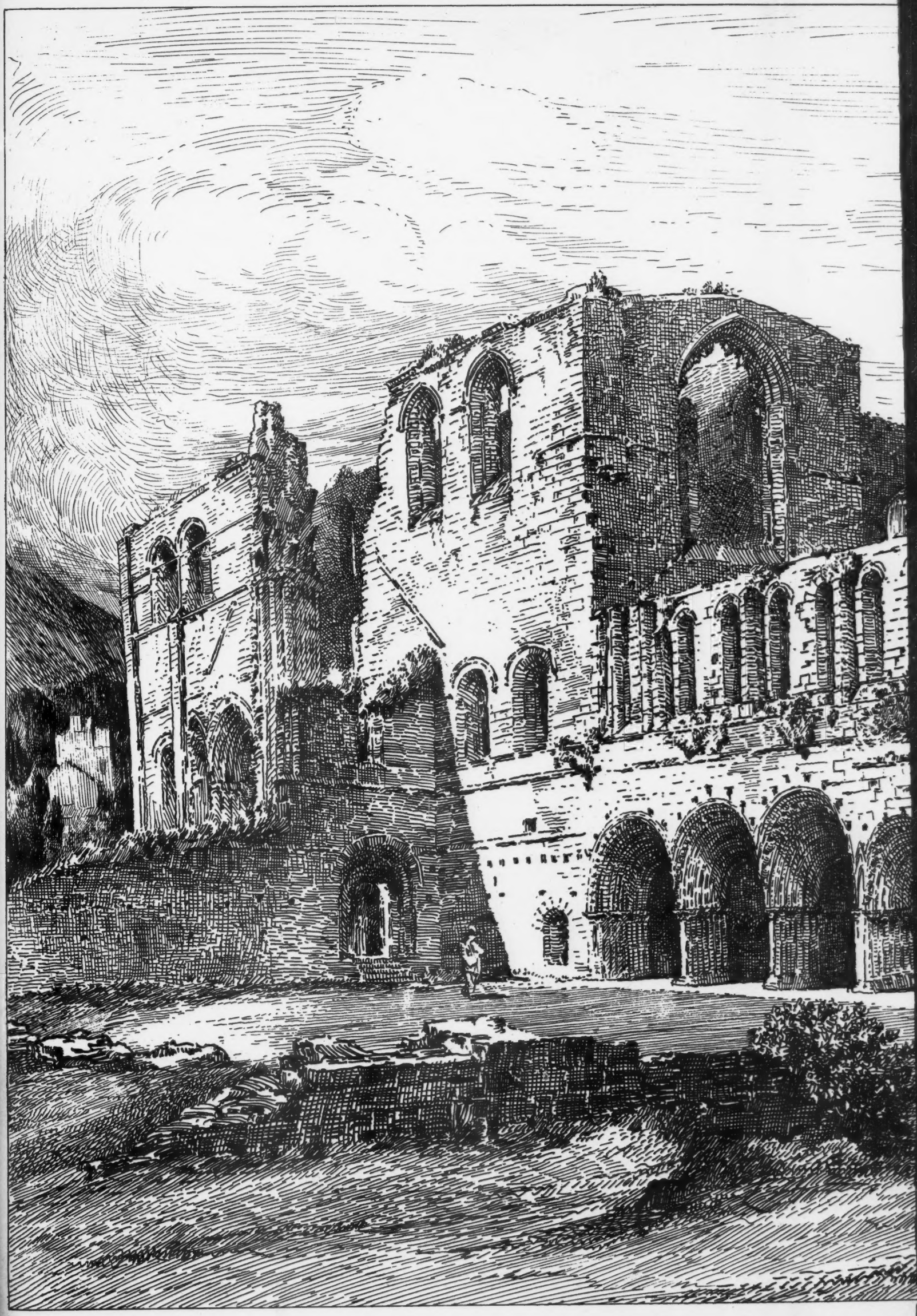

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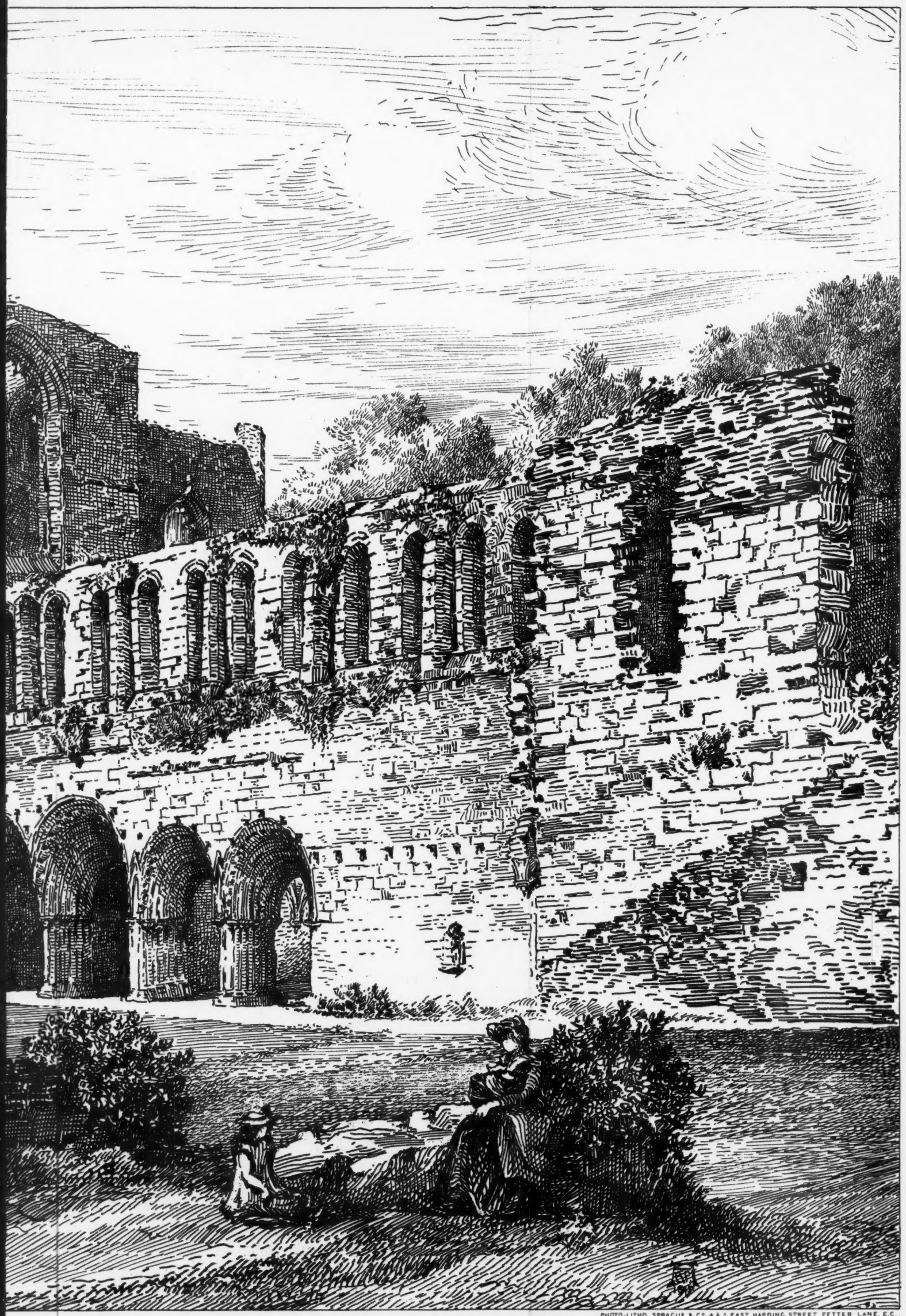

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4. FURNESS: FROM THE SOUTH-WEST ANGLE OF CLOISTER.

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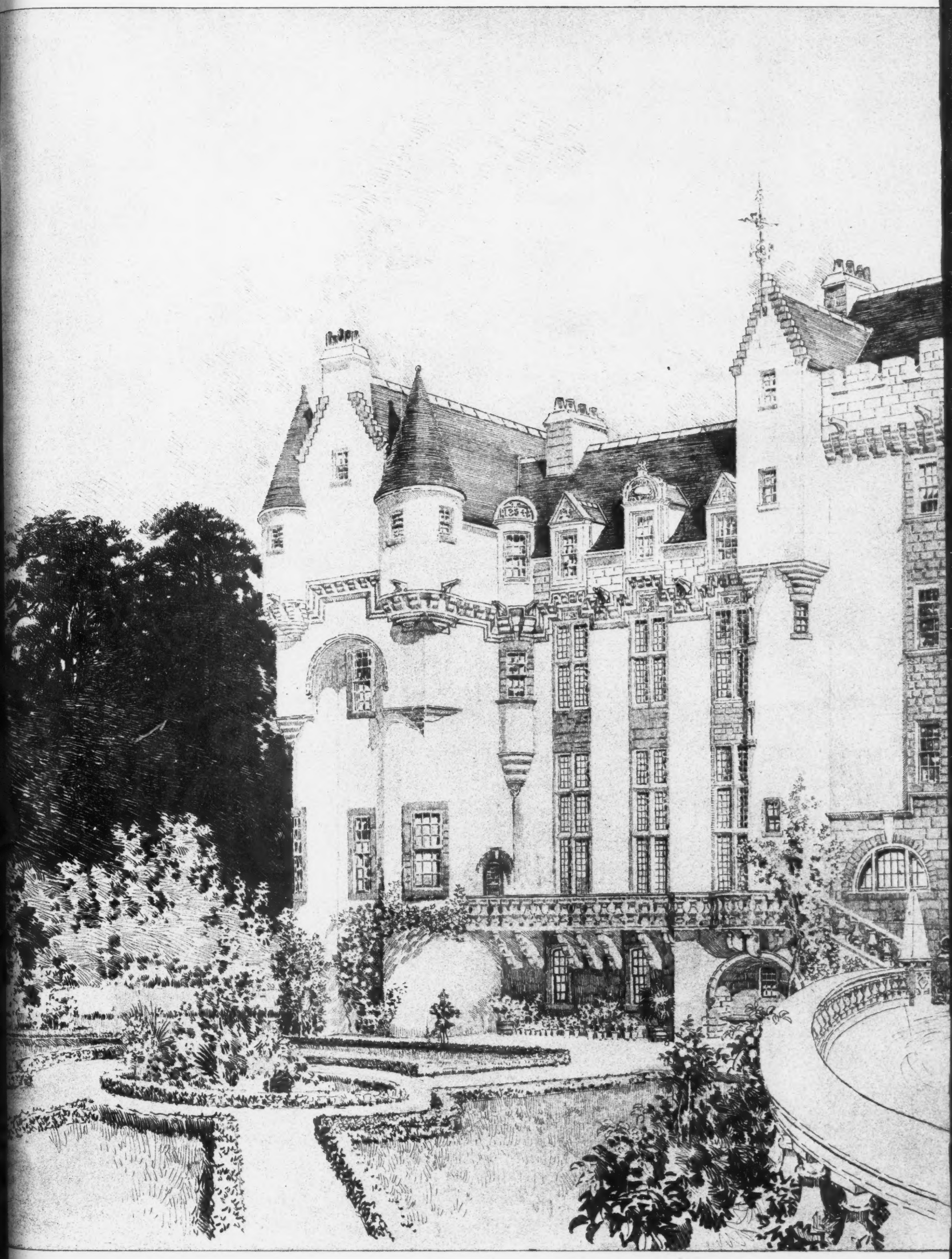

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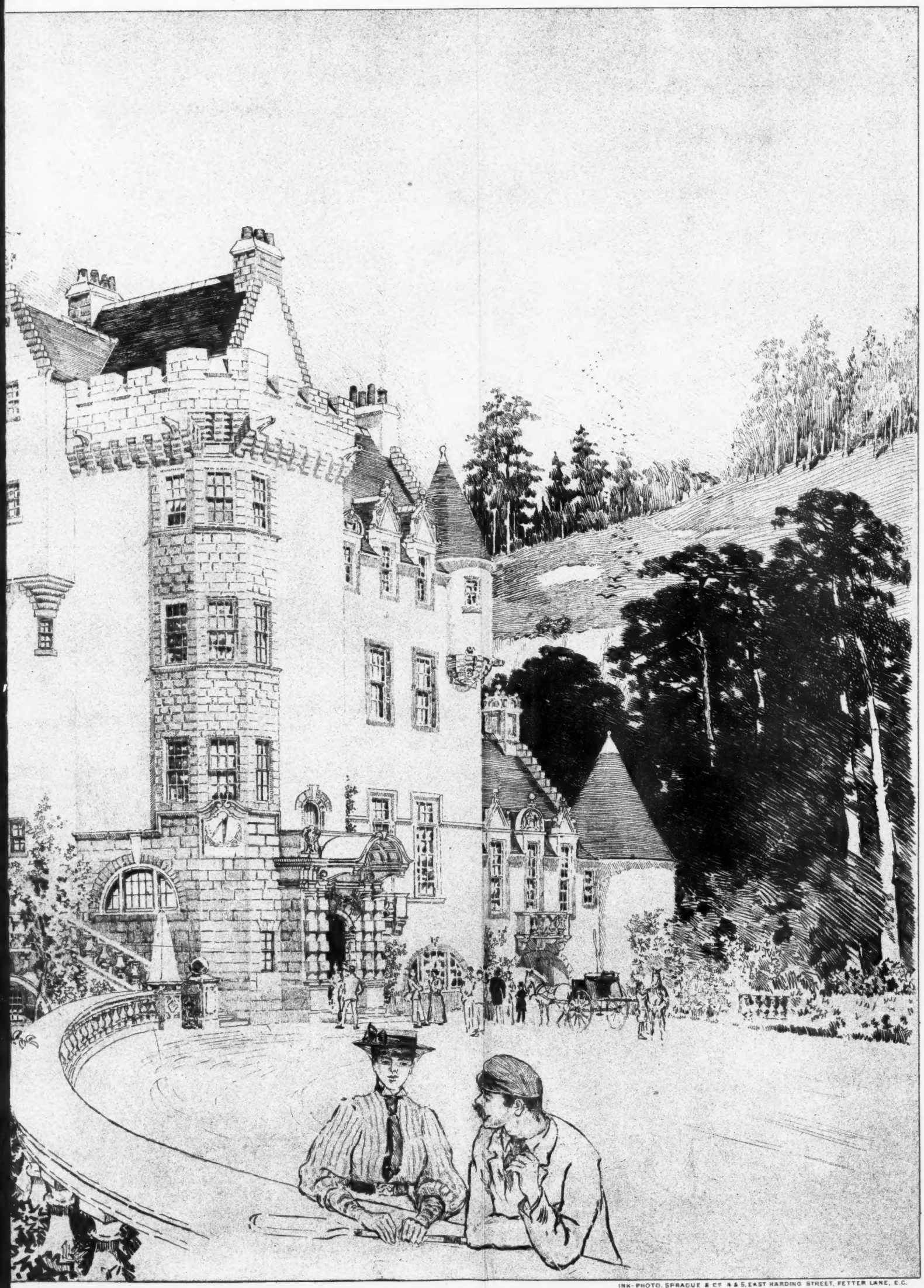

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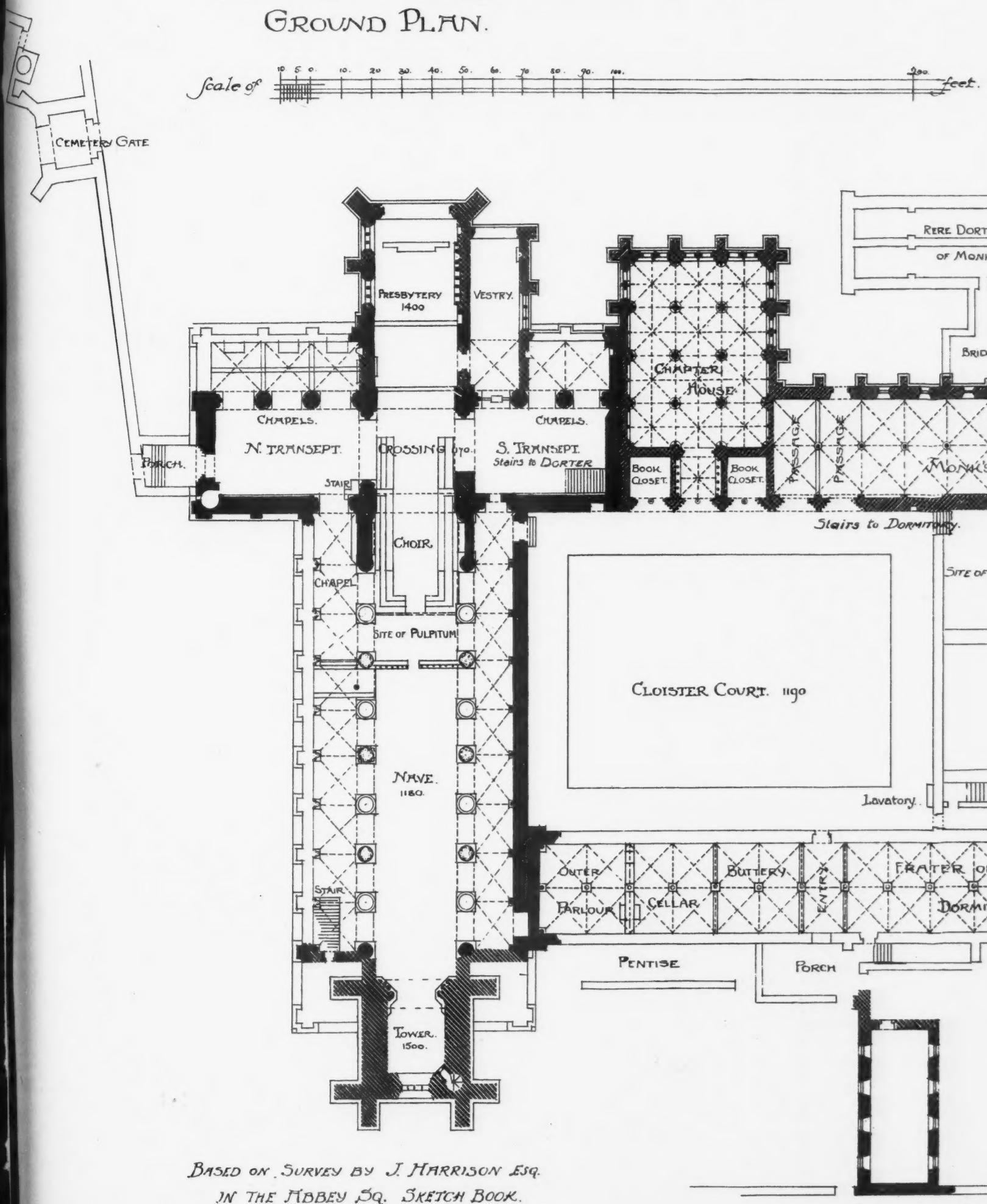
3.—Messrs. Niven & Wigglesworth, Architects.

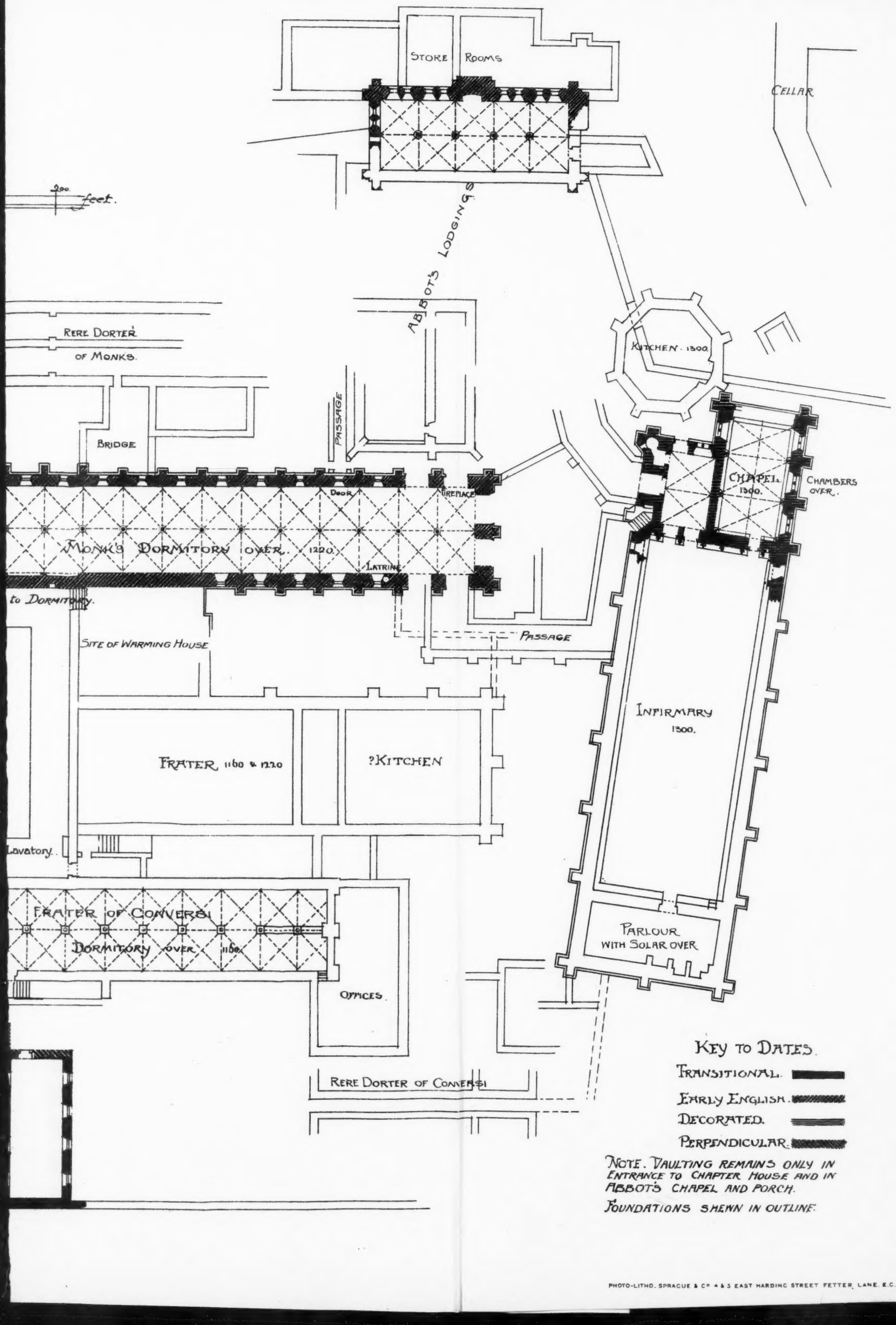
Mr. Joseph Pennell.

St. Mary's Abbey Furness.

Ground Plan.



Based on Survey by J. Harrison Esq. in the Abbey Sq. Sketch Book.



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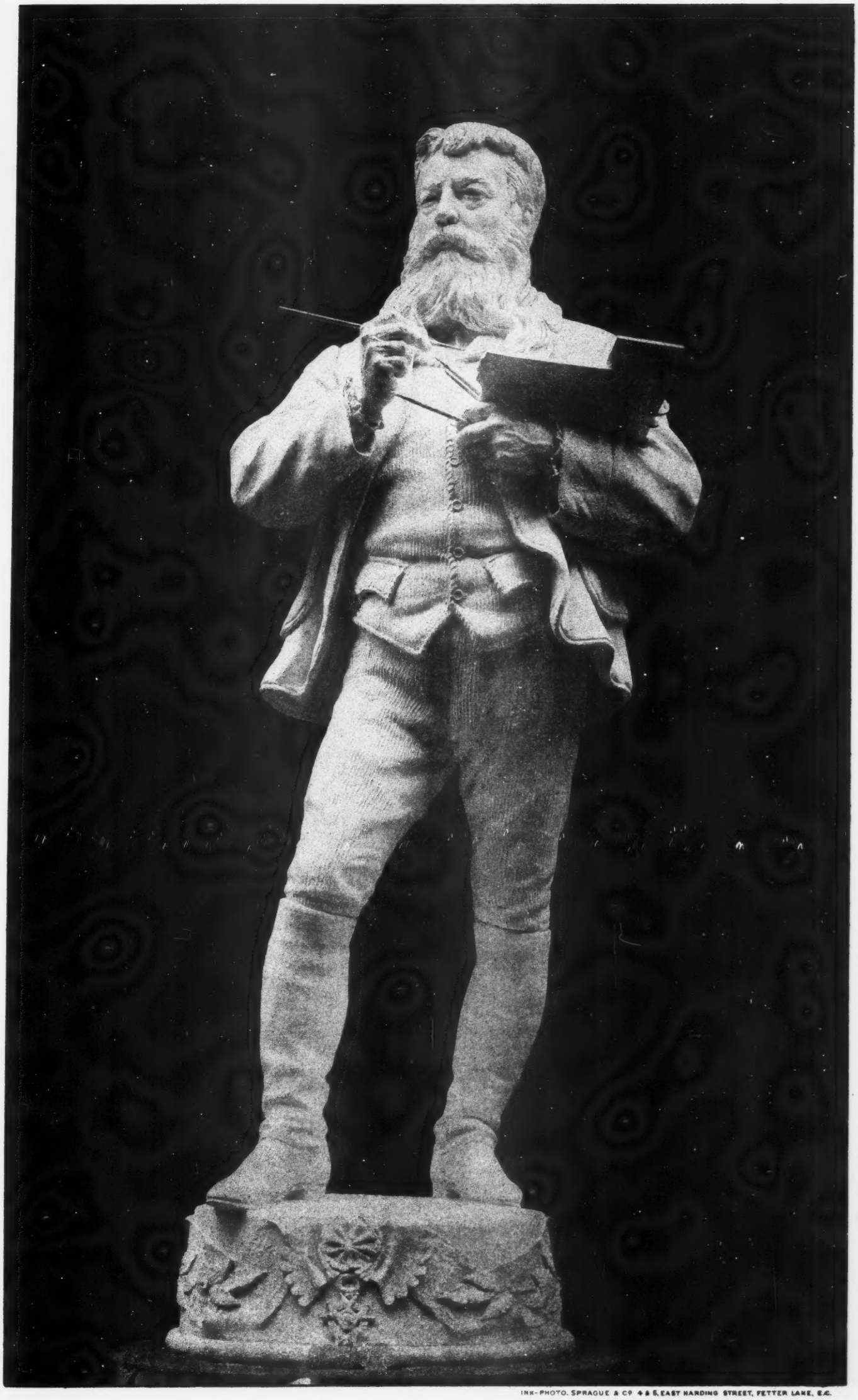
"LA ROCHEJACQUELEIN": PORTRAIT STATUE.—M. FALGUIÈRE, SCULPTOR.

Paris Salon, 1895.



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"MEISSONIER": PORTRAIT STATUE.—M. FRÉMIET, SCULPTOR.

Paris Salon, 1894.